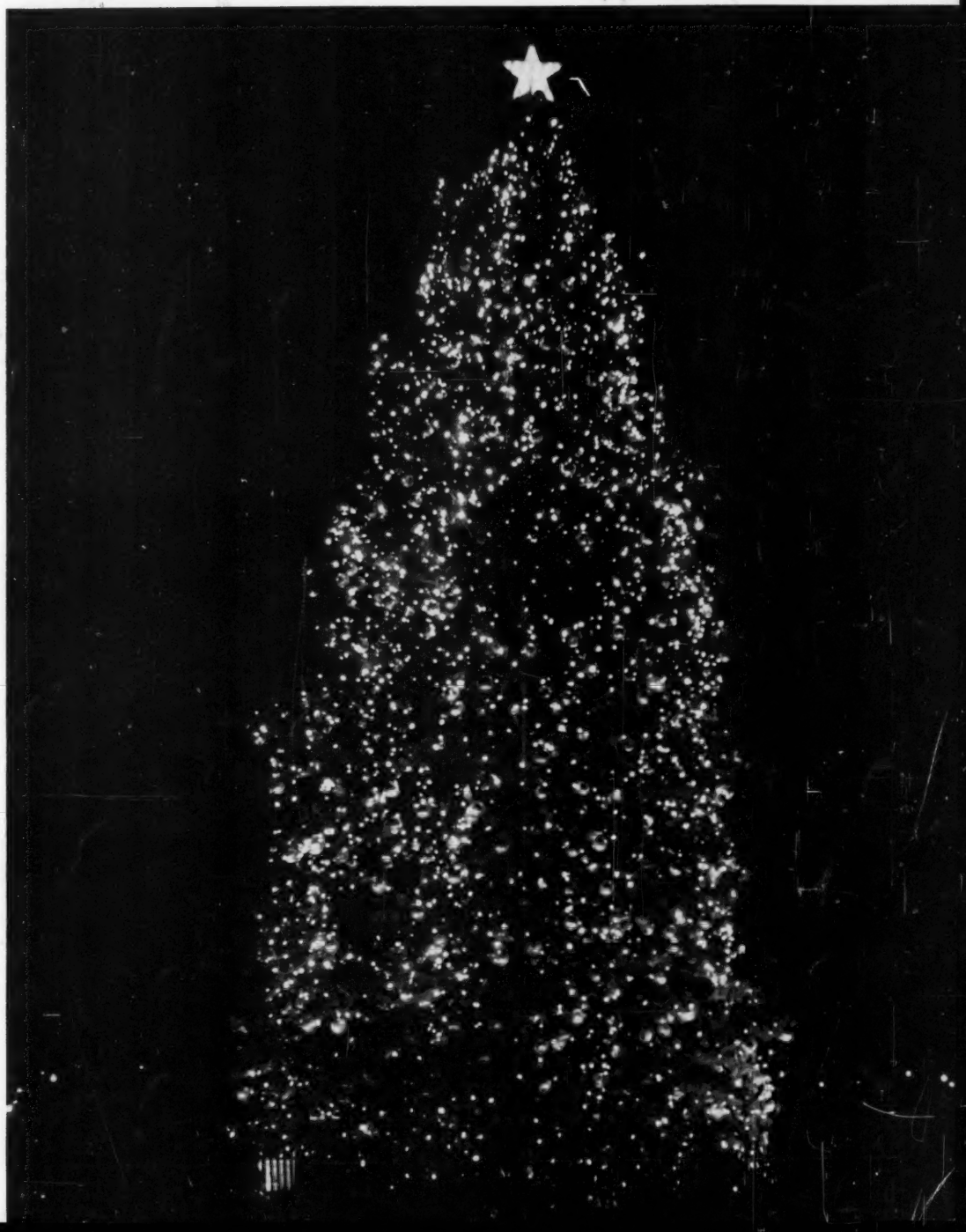
Journal of FORESTRY

December 1958



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Volume 56
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VOLUME 56 • NUMBER 12 DECEMBER 1958

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The JOURNAL OF FORESTRY, established in 1917, is the official organ of the Society of American Foresters, but the Society assumes no responsibility for the statements and opinions expressed by contributors.

Publication office, 425 Mills Building, 17th Street at Pennsylvania Avenue N. W., Washington 6, D. C. Address all correspondence concerning editorial or business matters to JOURNAL OF FORESTRY, 425 Mills Building, 17th Street at Pennsylvania Avenue N. W., Washington 6, D. C. Published monthly. Subscription $7.50 per year; single copies 75 cents. Missing numbers will be replaced without charge provided claim is made within thirty days after date of the following issue.

The editors are not responsible for loss or damage of manuscripts and photographs while in transit or in their possession. All material submitted for publication should be accompanied by return postage.

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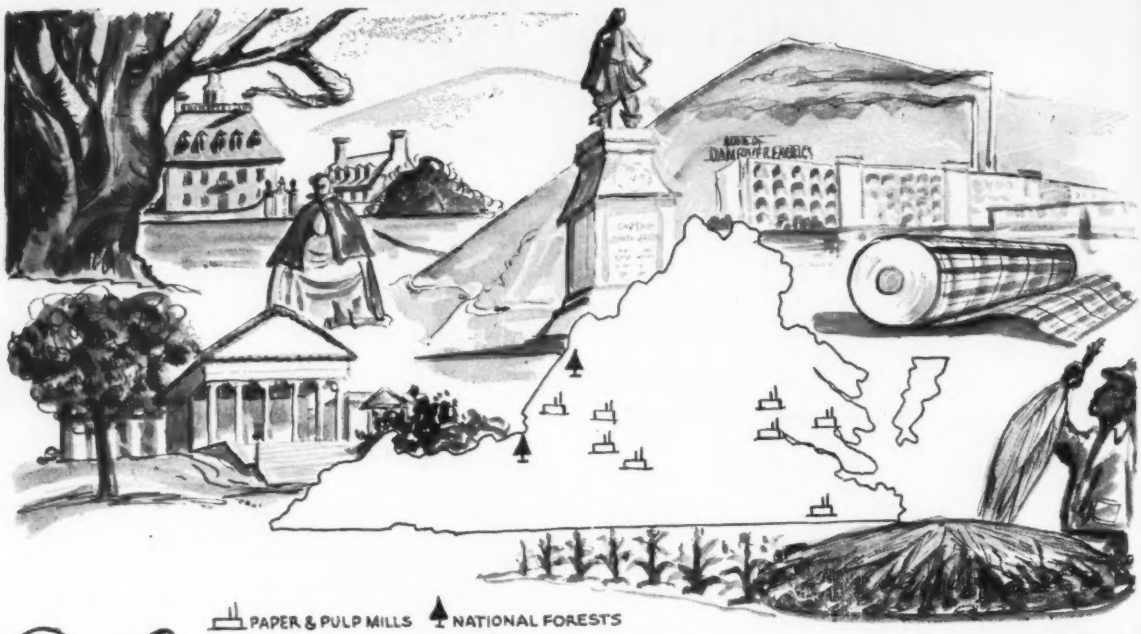
No. 44 of a series featuring forestry practices, projects and products.



Virginia

Virginia, home of presidents, has recently celebrated the 350th anniversary of the founding of Jamestown. The first permanent English colony in America, Jamestown was also the birthplace of America's forest products industry. Some of the first exports were products of the forest.

Heavily wooded when the colonists arrived, the Old Dominion is still a "forested" state. Over 16,000,000 acres, 63 percent of the total area, is in forest cover.

Forests contribute heavily to Virginia's economy: Forest industries pay one out of five wage dollars, operate two out of five industrial establishments. Forests also play an important role in Virginia's tourist industry, rated the state's sixth most valuable industry.

And, in addition to direct economic contributions, Virginia forests contribute enormous watershed values. Water is given first consideration when forest management plans are formulated for State and National Forests. Also, an intense forest watershed program is underway on privately owned forest property.

The Virginia Division of Forestry is perhaps most proud of the forestry work being done in the primary and secondary schools. Through this program the future forest landowners are imbued with the desire to perpetuate Virginia's leading role in forestry.

Virginians have come a long way in forest fire prevention . . . having today the best fire record in the South. This was one of the first states to create a forest pest investigation program and the forest management service provided by the Division of Forestry is outstanding in the Nation.

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Journal of Forestry

Official Organ of the Society of American Foresters

The 58th Annual Meeting

SALT LAKE CITY, UTAH and the Wasatch Mountains provided a unique setting for the 58th annual meeting of the Society of American Foresters. Held September 28-October 2 in the Hotel Utah and the auditorium of the hotel's Motor Lodge, the meeting drew a total of 742 registrants. Of this number 610 were members and guests, 132 were ladies.

Three days and evenings of formal meetings, September 29-October 1, included a general session, the Society Affairs session, and nine technical Division meetings. On September 28 the SAF Council held an all-day session, the editorial board of the JOURNAL and the Association of Consulting Foresters held evening meetings.

The General Session

George V. Hjort was chairman of the general session, held the morning of September 29, which launched the meeting on its theme of "Multiple-Use Forestry in the Changing West." After words of welcome from President George A. Garratt, Gus Bachman of the Salt Lake City Chamber of Commerce brought geetings from his city and region and expressed appreciation of the work of foresters as vital in Western economy. The morning's subjects and speakers were: "Management Planning for Future Multiple-Use Forestry on Western National Forests," by Donald E. Clark, U. S. Forest Service; "Our National Parks in the Dynamic Challenge of Outdoor Recreation," Lemuel A. Garrison, National Park Service; and "Our Citizens Among Our Trees," Fred J. Sandoz, Booth-Kelly Lumber Company.

Society Affairs

The annual business session of the Society, conducted by President Garratt, included reports of officers, staff, and committees and an open discussion of policy issues moderated by W. D. Hagenstein. All reports and discussions are published in the Society Affairs section of this issue of the JOURNAL.

Division Meetings

Nine subject Divisions held technical sessions as follows: The Division of Education, the Division of Forest Products, and the Division of Watershed Management conducted evening meetings on September 29. The Division of Forest Management held an all-day session on September 30, with the Division of Forest Economics and Policy, the Division of Forest Recreation, and the Division of Forest-Wildlife Management meeting in the evening. The Division of Silviculture and the Division of Range Management each held all-day sessions on October 1. All business conducted at Division meetings is reported in Society Affairs in this issue; technical papers presented will be published in the *Proceedings* of the 58th annual meeting.

Social Events and Awards

The principal scheduled social event of the meeting was the annual Society banquet held on the evening of October 1 and attended by a total of 576 persons. Vice President Henry J. Malsberger served as toastmaster; Dr. W. C. Cottam rendered the invocation. President Garratt presented the Sir William Schlich medal to B. Frank Heintzleman and an award for Achievement in Research to Nicholas T. Mirov (see following pages). The address of the evening was delivered by Dr. Tom Gill, executive director of the Charles Lathrop Pack Forestry Foundation and a Fellow of the Society.

Numerous alumni groups held get-togethers throughout the period of the meeting and the ladies participated in a special program of events.

Field Trip

Thursday, October 2, was devoted to an all-day field trip to the Davis County Experimental Watershed where watershed activities of the U. S. Forest Service were inspected and explained and a demonstration was given of Forest Service aerial fire fighting tactics. Over 400 men were in attendance and an interesting program, excellent weather, autumn scenery in the Wasatch Mountains, and careful planning combined to make a memorable day.

Appreciation

To Floyd Iverson and Reed W. Bailey, general co-chairmen of the 58th annual meeting, their committee workers, and the many others who contributed go the thanks of all in attendance and the commendations of the Society as a whole for a job well done.

Society of American Foresters Presents Two Awards at Annual Meeting

In 1954 a friend of forestry and of the Society of American Foresters performed a very generous act. This friend, who desires to remain anonymous, made a donation of $10,000 to the Society for the purpose of establishing awards "in recognition of outstanding achievement in basic or applied research in any branch of the biological sciences, provided the research contributes, either directly or indirectly, to the advancement of forestry." The recipients are selected by the Council.

Four awards have been made to date: to Leo A. Isaac of Portland, Oregon, for research leading to improved silvicultural practices in the Douglas-fir region; to Philip C. Wakeley of New Orleans, Louisiana, for experimental work on planting and genetical improvement of the southern pines; to Harold J. Lutz of New Haven, Connecticut, for outstanding contributions to our knowledge of forest ecology; and to C. Syrach Larsen of Denmark for valuable additions to the science of forest genetics.

The Council of the Society has again selected an eminent American forester to receive the award for achievement in biological research. As before, the award is in two parts: an engraved plaque in the shape of an enlargement of our SAF emblem, and a financial honorarium.

It is now my pleasant duty to present the recipient. He is our fellow Member, Nicholas T. Mirov of the California Forest and Range Experiment Station.

Presentation of an Award to
Nicholas Tiho Mirov
for Achievement in Research

by George A. Garratt, President
Society of American Foresters
at Salt Lake City, Utah
October 1, 1958

Creative scientist, distinguished author, and genial forester, Dr. Mirov has been selected in recognition of his valuable fundamental research in the physiology of forest trees.

Born on January 11, 1893 in Irkutsk, Russia, he was graduated in 1916 from the Institute of Forestry at Saint Petersburg and served in the Imperial Navy until the revolution. There followed a period of four years when he was in charge of a wood distillation plant in Harbin, China. He then came to the United States, becoming an American citizen in 1928. The University of California granted him the Master of Science degree in forestry in 1931 and the Ph.D. in plant physiology in 1936.

Starting his professional career in this country at the Southern Forest Experiment Station, he moved into private industry for a brief period and then to the California Forest and Range Experiment Station, where he has worked for nearly 25 years.

His outstanding research project has been an investigation of the chemistry of the oleoresins of eighty species of pine, a study completed two years ago. Wholly apart from the scientific value of this work in itself, it will also serve as a foundation for additional research in genetics, entomology, pathology, and taxonomy. Differences in turpentine composition, he showed, explain the differences in the susceptibility of different pines to beetle attack and may explain the variations in their vulnerability to disease.

One of the first government foresters to obtain grants-in-aid from foundations, he received financial support for research from the Rockefeller Foundation, and is currently studying the biology of flowering pine trees under a grant from Resources for the Future, Inc.

Dr. Mirov has been a consistent contributor to the JOURNAL OF FORESTRY for almost 30 years, his first article in that magazine having been published in 1929. He has also published extensively in other technical and scientific periodicials.

Last May he received the Distinguished Service Award of the U. S. Department of Agriculture, presented by Secretary of Agriculture Ezra Taft Benson.

It is now my honor to present him with the Society of American Foresters award.

Dr. Mirov, in behalf of the Society and of the anonymous donor whose generosity makes this award possible, I present you with this plaque and this check in recognition of your outstanding achievement in biological research leading to the advancement of forestry.

SAF President George A. Garratt presents (*Left*) the Sir William Schlich Memorial Medal to B. Frank Heintzleman and (*Right*) an Award for Achievement in Research to Nicholas Tiho Mirov.

Sir William Schlich, sometime inspector-general of forests for India, late professor of forestry at Oxford University, and author of the monumental 5-volume *Manual of Forestry*, was perhaps the most influential forester in the English-speaking world during the latter part of the past century.

Following his death in 1925, friends and colleagues around the globe subscribed funds for the purpose of establishing a memorial to commemorate his great services to forestry. American foresters contributed to the fund, of which the Empire Forestry Association was named custodian.

Beginning in 1929 proceeds from the fund were rotated annually to the nations that had contributed to it. The first award was made to the United States in 1932. The Society of American Foresters was designated as its custodian, and the Council of the Society used the proceeds to pay for the design and casting of a bronze medal. Named the Sir William Schlich Memorial Medal, it is bestowed periodically by the Council in the name of the Society in recognition of outstanding achievement in the advancement of forestry.

President Franklin D. Roosevelt was the first recipient of the medal, presented to him in 1935 as an expression of appreciation by the forestry profession for his contributions to the conservation of natural resources.

Gifford Pinchot, founder and first president of the Society, received it in 1940. Since then the medal has been conferred biennially to the following eminent foresters:

Henry S. Graves in 1944.
William B. Greeley in 1946.
Herman H. Chapman in 1948.
Ralph S. Hosmer in 1950
Elwood Wilson (posthumously) in 1952.
Tom Gill in 1954.
Samuel T. Dana in 1956.

It is now my great pleasure and honor to make the tenth presentation of this medal. The recipient is a distinguished American forester, an administrator of outstanding competence, and a public servant whose devotion to the national welfare during a long and honorable career has been in the highest tradition of our profession. He is B. Frank Heintzleman, former regional forester and governor of Alaska.

Presentation of the Sir William Schlich Memorial Medal to B. Frank Heintzleman

by George A. Garratt, President
Society of American Foresters
at Salt Lake City, Utah
October 1, 1958

Born in Fayetteville, Pennsylvania, on December 3, 1888, he grew up in the beautiful South Mountains of Franklin County. He attended the old Pennsylvania State Forestry Academy at Mont Alto, receiving the degree of Bachelor of Forestry in 1907, then went to Yale where he obtained the Master of Forestry degree in 1910.

That same year he entered the U.S. Forest Service as a forest assistant in Oregon. Promoted to the position of forest examiner in 1913, he was made deputy supervisor of the old Cascade (now the Willamette) National Forest in 1914, subsequently becoming supervisor.

Transferred to Ketchikan, Alaska in 1918, where he handled timber appraisals and logging engineering on the Tongass National Forest, he became assistant district forester in charge of timber sales in 1922, with headquarters at Juneau.

In 1934 he was called to Washington, D.C. to serve as a public representative in cooperative forestry work with the timber industry in the National Recovery Administration. He stayed with the NRA through 1936, including one year as deputy administrator in charge of the Lumber Division.

Returning to Alaska, he was appointed regional forester in 1937. He was territorial director of the Civilian Conservation Corps from its inception until 1939. From 1937 to 1941 he was chairman of the Alaska Planning Council.

During World War II, Mr. Heintzleman was director of the Alaska spruce log program which produced 85 million board feet of quality wood. The famous British Mosquito bomber was made possible by this program, which was given a "superior service award" by the Secretary of Agriculture for outstanding accomplishment under difficult conditions and a critical shortage of spruce for aircraft construction.

One of the nation's foremost authorities on the enormous timber resources of Alaska, he negotiated the first contract of 1.5 billion cubic feet of pulpwood in 1948. As a result, Alaska's first pulp mill began operations in 1954. A $52 million plant, it represented the territory's first major industrialization based on the forest resource. Under plans developed by Mr. Heintzleman, four or five additional large mills can be supported in perpetuity.

On April 10, 1953 Mr. Heintzleman became governor of the territory, following nomination by President Eisenhower and unanimous approval by the Senate. He served until his resignation in 1957, after having spent 46 years in public service. But even in private life he continues his dedicated labors for Alaska and for the economic and social development of this last American frontier.

In summing up the career of this Fellow of the Society whom we honor tonight, I point to his long years of singleminded devotion to the public service, his intense loyalty to the forestry profession, and his friendly personality that has endeared him not alone to professional and business people, but to Americans of all walks of life from cabinet secretaries to sourdoughs. His career is more than a story of success; it is an inspiration to foresters everywhere.

Mr. Heintzleman, in behalf of the Society of American Foresters, I have the honor to present you with the Sir William Schlich Memorial Medal for distinguished service to forestry.

Widening Horizons[1]

Tom Gill
Charles Lathrop Pack
Forestry Foundation, Washington, D. C.

No one, I believe, could have listened to the talks of these past days without a quickened realization that in multiple use we have been dealing with something that does promise to endure. The subject matter of multiple use may not all be new—some of us recognize in it many old friends—but what is new is the heightened emphasis on forestry's broader functions, and the implications that are bound to follow.

One of the most significant things about this emphasis lies in the broadening of forestry's horizons and of the forester's own horizons. It lies in an increased awareness on his part—and I hope on the part of the public—of all that forestry can do for human good, the potentialities that beckon us beyond the sphere of forest products alone. It is a concept that should restore to us something of the forester's heritage we may have largely overlooked: the concept of the forester as the land manager, especially of the wild lands, in addition to his being the man whose work has to do with the growth and protection and harvesting of trees. He does that, surely, but beyond that he, more than any other man, should have the competence and the responsibility for advancing the integrated use of all the natural resources.

And this may not be coming a day to soon, for as resources diminish and populations soar, we can ill afford not to integrate and harmonize every possible human use in a world where each year 35 million more people are asking for food and shelter.

So I certainly would not want to seem to belittle the productive role of forests or the importance of wood. After all, you can't afford to belittle something that

Tom Gill

gives the world fuel, food, fibers, chemical derivatives, and an endless number of structural materials. You may remember that once, over at the Forest Products Laboratory, they tried to take a census of wood uses. Finally, when they reached a count of 4,500 different uses and no end in sight, they gave it up. No, the forest as a wood factory has a secure place in the nation's economy.

But to that we need to add, I think, something more of the German forestry ideal, an ideal that never forgot that forests are not only producers of the world's most versatile material, but also protectors of soil, water sources, wildlife, and places of recreation beyond the blare of juke-boxes.

This emphasis that we have been giving to those added values is something we have long needed for a more complete appreciation of what forestry and land management mean to the whole economic structure. And here too, let's not confine ourselves to the economy that has to do with lumber, plywood, and pulp, but the economy that springs from a permanently protected agriculture, from irrigation systems made a little safer through the stabilization of upland soils.

Maybe an important value of the multiple-use concept is that its implications do go beyond the economic. Aldo Leopold used to say that one weakness of a conservation system based on economic motives is that most members of the land community have no economic value. But that's a long way from saying that they have no values in terms of human living.

Much of my own work for the past 20 years has been concerned with what could be described more accurately as human values rather than the more easily measured and readily defended economic values. A large part of that work has been among peoples where the protective functions of the forests are clear, for in many of those lands it has not been the forest products that are so important as the part trees play against erosion and dessication and crop failure.

Actually, in some regions, if not a stick of timber were ever harvested, forests would still be indispensable to human habitation. Those of you who know Mexico City may remember the broken, irregular pavements, the undulating streets, and the occasional building leaning at an angle. And you may have been told that the city itself is sinking at a rate of about 10 inches every year.

The reason is that the inhabitants of the Valley of Mexico seem to have committed as many ecological crimes as their northern neighbor. They've cut down the forests on the hillsides above the city, they've overgrazed the grasslands, and they've tried to raise crops on slopes fit only for forests. Meanwhile, Mexico City rests on a semi-liquid mass which is being robbed of its liquid content by countless pumps and by the inability of deforested and overgrazed land to restore the water. The result is cracked buildings, broken pipes and watermains, sewers un-

[1]Address given at the banquet, annual meeting, SAF, Salt Lake City, Utah, Oct. 2, 1958.

able to function, and intermittent floods. The value of trees just as trees on many of Mexico's parched and eroded hillsides would be hard to overestimate.

But the value of trees just as trees has yet to win universal acceptance. Half-way across the world from Mexico is a steep forested hillside in Japan. There, about ten years ago, a wide strip had been clearcut from the bottom of the valley to the very ridgetop. Nothing was left on that strip but stumps. As the years went by, critics began pointing out that this strip, bare of all tree life, was just as stable as the forested areas on both sides. There was a little more erosion, perhaps, but the soil, even though filled with rain to saturation, showed no tendency to creep. So here, apparently, was a concrete refutation of the need for trees as soil stabilizers, even in a country where the soil is notoriously unstable. Then, seven years after the cutting, the ground again was soaked with one of Japan's torrential rains, and suddenly the whole strip slid down into the valley, while the adjacent forested areas held firm. You've already guessed what happened The roots of the cut trees had been holding the soil in place during those seven years. When these roots finally disintegrated, down came the landslide, and nature once again had demonstrated the effect of forest influences.

American Foresters Abroad

Forest influences probably make themselves more acutely felt in places where human life is less secure, where one is closer to the brink of starvation through long misuse of trees and land. And it's about what American foresters are doing out there in some of those remote outposts I should like to talk a little tonight. For it's there too that we find another instance of the widening of forestry's horizons, a widening undreamed of 20 or even 10 years ago. It's a geographic widening in this case, for it has to do with the expanding role of American foresters on the world scene.

From its very beginning, forestry in the United States has always had a battle of one kind or another on its hands. That's one of its supreme charms. So it may be only appropriate that, so far as our participation on the world stage is concerned, forestry has received its greatest impetus from war.

As far back as the war with Spain, American foresters first found their chance to bring our methods and techniques to foreign lands. When our army occupied the Philippines, they found there a moribund forestry office established by the Spanish. It did very little more than collect fees for timber cutting, and it probably would have died a quiet death were it not for a young captain in the American Army named George Patrick Ahern.

Ahern had learned forestry by ear, through association with Gifford Pinchot, and like most Irishmen, he couldn't resist obstacles. For he immediately tried to make something out of this Spanish forestry office, and in 1900 he was placed in charge. There followed a housecleaning in the best American tradition. On the technical side, Ahern's silviculture may have been a little wobbly, but there was no denying that he brought something new to Philippine forestry. He brought a complete honesty of administration and an unbeatable will to get things done. Then later a staff of technical foresters came out from the States, and still later a corps of American-trained Filipinos was built up, until forestry in the Philippines has become an integral part of government activity, molded largely on the form given it by those early Americans.

Employment Classification
1958 Annual Meeting
Salt Lake City, Utah

Federal	321
Private	89
Educational	79
Students	50
Miscellaneous	39
State	32
	610

And this influence has never been lost, for the Filipinos have turned for their type of training and method of administration to the United States in much the same way as Japan had turned to Germany, and Mexico in the early days had turned to France.

But actually it was not until the Second World War that American influence reached international maturity. You may remember that toward the last days of the war an international Food and Agriculture Organization—called for short FAO — was created. Its purpose was a truly magnificent one, nothing less than to raise the levels of nutrition and the standards of living for the world's peoples. And into this organization, somewhat late to arrive and somewhat uncertain of its welcome, came a division of forestry and forest products.

There was very little precedent or guide for FAO, so an interim commission was called together to draw up a blueprint for the kind of work it should undertake. It was on the forestry panel of this commission that Americans began to make international history.

The panel consisted of representatives from nine countries. China and Russia were there; England sent over one of its leading educators. Lyle Watts, then chief U.S. forester, devoted much of his time in helping guide the work. E. I. Kotok was one its most active counselors. Walter Lowdermilk sat with us, contributing of his vast background of experience, especially in the Far East. And last, but far from least, Henry Solon Graves was the panel chairman.

I think it is fair to say that Americans gave more to this work than any other nation. And looking back, I believe this panel marked one of forestry's proudest moments, for nationalism was forgotten. No one was trying to advance the forest fortunes of England or the United States or Russia. The sole objective, the one impelling idea, was to make forestry render its greatest services to man in a war-torn world. Incidentally,

the report of this panel has been called the Magna Carta of forestry. If you happen to read it, you will find that ample recognition has been given the multiple-use concept.

Later, when FAO became established in the United Nations, American foresters were asked to occupy positions of importance, both on the permanent staff and on committees, and they have continued to help shape the thinking of FAO, which has now grown in size and importance until it occupies a great building in Rome and has regional offices throughout the world.

It was war too that gave Americans the chance to make one of their most memorable contributions to forestry in foreign lands. That was in Japan. After the Japanese surrender, General MacArthur created what was probably the most humane occupation history has ever known. It was thanks to him that Japan escaped starvation, and it was thanks to his staff that early steps were taken to patch up the badly shattered forest economy and modernize their forestry law.

To two members of our Society goes the chief credit for this: Arthur R. Spillers and H. B. Donaldson. It was Spillers who conceived the idea of a Department of Natural Resources for the occupation, and it was Colonel Donaldson who, as chief of the department's Branch of Forestry, put into effect a system that could well serve as a model for administering forestry in foreign countries.

Faced with an almost hopeless forest situation, Donaldson arranged for a number of technicians to come out from the United States to study and report on different phases of Japanese forest problems. He would bring in one specialist to study reforestation; another, forest taxation; a third, watershed management; and so on. These men were officially known under the somewhat grandiloquent title of "visiting expert." They may have been the ones who inspired the cynical definition of an expert as a man with a briefcase a long, long way from home.

But it was these experts who, through their reports, built up a body of technical information that served as a basis for forest policy and made the Japanese forestry law possible. Today we have more usable data on forest conditions in Japan than on many a European country, simply because of the work accomplished by Donaldson's stable of Americans with a briefcase.

Even further than that, Americans gave a new orientation to forestry in Japan. For in days before the war her foresters had followed somewhat too literally the thought and practice of Germany, and there was more than superficial truth in the saying that Japanese foresters had imported everything from Germany except the climate. What they needed was a greater degree of flexibility to fit local conditions, and it was precisely this flexibility that the Americans introduced.

History does have a way of repeating itself. The debt that we Americans owe to German forestry is even greater than Japan's, and we, like the Japanese, had to learn to modify our practices to suit our own local conditions. And in some ways, the waning influence of German forestry in Japan is paralleled by the ebbing tide of influence once held by the British foresters in the Orient. Their withdrawal from their former colonies has created a professional vacuum. How this vacuum will someday be filled or what the eventual loss to forestry may be, no one can say.

But one can say this: No nation ever gave firmer support to forestry in lands under their care than did the British. They built up a skilled and dedicated group that is the envy of nations. British foresters were trained and conditioned for work overseas. They had a vision and a technical competence and an integrity that will always command the admiration of our profession. Often they worked under incredible difficulties, yet the monuments they have left in terms of sound silviculture and painstaking research in India, Ceylon, Malaya, and elsewhere, will long endure. But with the transition of the British Empire into the British Commonwealth, it was inevitable that much of the administration — forestry included — would be taken over by nationals. And with the creation of American technical assistance, it was equally inevitable that some of these coun-

Attendance Record—1958 Annual Meeting
Salt Lake City, Utah

Alabama	6	North Carolina	6
Arizona	22	Ohio	8
Arkansas	5	Oklahoma	2
California	54	Oregon	43
Colorado	26	Pennsylvania	9
Connecticut	3	Rhode Island	1
District of Columbia	38	South Carolina	4
Florida	1	South Dakota	4
Georgia	10	Tennessee	3
Idaho	48	Texas	6
Illinois	10	Utah	142
Indiana	2	Virginia	3
Iowa	5	Washington	18
Louisiana	10	West Virginia	2
Maine	1	Wisconsin	13
Michigan	15	Wyoming	14
Minnesota	9	Alaska	5
Mississippi	7	Hawaii	1
Missouri	4	Virgin Islands	1
Montana	24	Canada	2
Nebraska	1	Belgium	1
Nevada	2	Switzerland	1
New Hampshire	1		
New Mexico	12		610
New York	6	Ladies	132
			742

tries would seek help from the United States.

Technical Assistance

These technical assistance programs have been major factors in spreading the influence of American foresters throughout the world. No one knows exactly how many of our foresters are employed today in foreign fields. We do know that between 50 and 60 members of our own Society are working overseas, and that another score or more have had foreign experience. One index of the interest of foreign countries in American forestry lies in the fact that today there are over 500 subscribers to our JOURNAL. There are subscriptions from almost any country you care to name: Iceland, the Argentine, South Africa. The two greatest subscribers are Japan, with 60 subscriptions, and Russia, with 36.

Another gauge of foreign interest is the rising demand for American foresters to work beyond our borders, and the problem becomes increasingly one of finding men to answer those calls. So on the plus side of the international picture we have a sustained demand for American foresters, we have a federal Forest Service alert to the need for recruiting competent men, and within the Society itself we have a very capable Committee on International Relations, and in Henry Clepper we are fortunate in having one who, himself, is taking an active part in world forestry. And even beyond all this, we have the scientific know-how and the backing of American dollars.

But the one thing we do not have is a policy. We still do not have a declared purpose, a set of guiding principles, or even a sense of awareness of our own forestry objectives in foreign lands. There can be no doubt that the help we have given in the past would have been more intelligent and more far-reaching had it been implemented by a forestry policy agreed upon by all federal agencies that had to do with the administration of forest lands abroad. Maybe that's too much to hope for, especially in view of our somewhat muddled situation here at home, where, for example, over 20 separate federal agencies still administer programs affecting our land and water resources.

This lack of policy and of unification is far from being an academic matter. For one thing, it makes the dollars we spend—and we spend plenty—less effective. It makes foreign nations a little wary of us when they see American foresters at variance with one another, simply because they are employed by different agencies with different points of view.

One of our troubles is that the federal agency which could do more than any other for foreign forestry is not oriented toward resource management. That agency is the International Cooperation Administration of the State Department, better known as ICA. ICA was created to help other nations attain to higher living standards—as worthy a purpose as one can conceive. And to that end ICA spent in 1957 over 1½ billion dollars. The help they give is extended in two ways: first, they provide nations with material things needed for their development, such as jeeps, farm machinery, factories; second, they help them with our scientific know-how. This know-how is made available by lending them our technicians, engineers, agronomists, specialists of various kinds. And in all too few cases, foresters.

Today ICA employs between 800 and 900 technicians in foreign fields, and of these about 25 are foresters. The foresters who are working for ICA have had to carry on as isolated units, unsupported by central policy or direction. What these foresters are able to accomplish depends largely on the support they receive from their local mission chiefs. If the mission chief has no interest in forestry, if his background does not happen to include it, and the country itself happens not to ask for it, then that particular country is very likely to get little or no attention to their forest values, even though these values may form a major part of the nation's economy, even though their potentialities may exceed those of all other resources. There are foresters in ICA doing magnificent jobs, but this has been due to their own individual initiative or to the demand of the local people, not to any overall policy.

This failure to include forestry among the major functions is easily understandable. ICA grew out of a number of parent organizations, none of which had much to do with long-range management of resources. What they sought was methods of rapid development. helping nations industrialize, produce. And the policy-makers were never thinking in terms of integrated resource use.

So you will search a long time among the organizational charts of ICA before you find forestry. And when you do find it, you may need a few of your favorite tranquilizers. For far down, in a so-called Agricultural Specialists Division, your eye will pass over minor branches of cereals and fibers, of fats and oils, and others. And finally you will come upon a Branch of Special Commodities, clinging almost to the very bottom of the chart. This includes seafood, legumes, vegetables, tobacco, beverages—and forestry.

At about this time it is hard to escape the feeling that ICA falls a little short of complete appreciation as to what forestry is all about. For I often wonder by what process of thought forestry can be conceived of as a special commodity, parallel with broccoli and Bull Durham. But there it is, despite the fact that over 50 percent of the land that ICA is concerned with is forest land, and despite the fact that one of its major objectives is to improve agriculture — and in many regions you can't and never will improve agriculture until the upland soils are stabilized by forestry measures.

Worse still, in helping some needy nation develop its wood resources, there would be nothing to prevent ICA's actually subsidizing forest destruction, for ICA need have no concern for the condition

in which a forest area may be left after lumbering.

This is not criticism for the sake of criticism, but because it involves, I think, a large and important blind spot in our foreign work. For if ICA could be better oriented toward resource use, the billion and a half dollars it spends annually might make a much more permanent contribution to the world's welfare.

I know, of course, how hard it is to change things in a democratic form of government. It takes time. I remember Colonel Greeley saying that for really rapid progress in forest conservation, the ideal form of government is an absolute monarchy tempered by assassination. So we should not lose hope that someday forestry will be recognized in ICA not as a commodity but as a major form of land use. Until that happy day arrives, our profession must share its lowly place with prunes, peanuts, and Pepsi-Cola.

Need for Foreign Policy

Yet it should not be so very difficult to enunciate an American forest policy that would define our basic attitude as a nation that accepts — in principle, at least — the concept of conservation. There should be no reason why, when a country asks for help in developing its resources, we should not say, "We will help you with the best aid and advice our technicians can give and our equipment can provide, but as part of any development program there should be a program to protect and build up your resource base. For there can be no ultimate gain in exploitation at the expense of future productivity." I think tomorrow's generations in those countries might someday thank us for that.

For most of us know how terribly easy it is to wreck a region, whether through overgrazing, or overcutting, or any other form of destructive use. And we know too, how heart-breakingly difficult and sometimes impossible it is to restore land to its former state. In many countries, the line between use and abuse is very tenous, and ecological blunders, however well intentioned, are not easily rectified.

One such blunder, ever since the dawn of history, has been the attempt to introduce permanent agriculture on forest soils, especially upon tropical forest soils. We do need more land for crops—this is a hungry world—and it is almost irresistible to point to the great tree-covered regions of the tropics and prove statistically that here is all the land we'll ever need to raise enough food for everybody.

One of the pleasant things about statistics is that if used carefully enough they can be made to bring aid and comfort to many a shaky thesis. And when you see those magnificent tropical rain forests —and they are the most luxuriant plant associations in the world, with scores of trees per acre, crowding each other aside, fighting it out for sunlight — when you see them, you think that any soil that could support such growth must be of surpassing fertility.

But actually much of this soil is not fertile at all. In many regions the fertility that sustains these great forests lies not in the soil but in the vegetation. The soil is little more than a foothold for roots and a passageway for nutrients. The nutrients are kept in constant circulation by an almost instantaneous decomposition of dead plants. That is where the fertility lies in this greatest wood factory on earth. It lies in the dead and decaying plants. Take them away, as you do when you clear the land for agriculture, and you have left only a very sterile, inhospitable soil, a memorial to what someone has called ecological illiteracy.

Men's misuse of forest land has been going on since pre-history. And the long battle against erosion, dessication, and waning resources American foresters are now waging in many lands. Often an up-hill battle, fought against a phalanx of prejudice, poverty, and even of governments more interested in their own perpetuation than in the welfare of their people. It's there, on conservation's firing line, that American foresters are being met in ever-increasing numbers—in the Orient, in the tropics, in places that are only names to most of us. They're trying to make life more secure, to make the good things of life more abundant, and one of their major tools is what we are calling multi-pleasure.

The tale of what our foresters are doing routinely out there, as part of the day's task, deserves a very special mention when the history of American forestry is written. But even more dramatic are the stories of how they carried on in wartime. Those are tales that quicken the pulse and give you a new pride in our profession. There's Hugh Curran, the Grand Old Man of tropical forestry, who, when the Japanese arrived in the Philippines, took a little group of Americans back into the hills and taught them how to hide and live and survive under jungle conditions. Today, at 83, Hugh Curran, a Fellow of our Society, is still working in Venezuela, one of America's true ambassadors who has everlastingly raised the prestige of Americans and American forestry among our Latin neighbors.

And the tale of Arthur Fischer, another of our Fellows, who will never be forgotten wherever foresters foregather to talk of their great ones. The story is told how, during the invasion of the Philippines, when we desperately needed cinchona seed to start our own source of quinine, Colonel Fischer, ill and emaciated, flew out with 90 pounds of seed, dodging enemy pursuit planes, until at last he brought his precious cargo safely into Allied hands.

And there's the story of Paul Bedard, waging guerilla warfare behind the Japanese lines in China, cut off from Allied support, slugging it out, and at last receiving one of China's highest honors from the hands of Chiang Kai-Shek.

In a very practical sense, I think, the work of Americans overseas is still another example of multiple

use, for it's making the world more aware of forestry as an integral part of human economy, and wherever it has a chance it is making for better accord between nations.

I know what a very fragile hope the solidarity of nations may seem today, but it is too precious a hope to give up lightly, and in that hope many of us labored to get forestry into the United Nations, for we felt that here something more than forestry was involved; it was the ability of nations to work together in a world that may have to choose and choose quickly between teamwork and disaster. It was in that hope the Pack Foundation spent much of its time and funds in foreign forestry, feeling that here the dollar does double service. And it is in that hope too we are striving to have forestry better established in the technical assistance programs of the State Department.

For long after the bulldozers and jeeps and concrete dams and all the material things that we are giving to the nations are outmoded and forgotten, our most durable contribution may well lie in showing them better ways to make life securer and richer and more worth the living. Temporarily we can help these people with dollars, but in the long run we can help them much more with techniques and most of all with the vision of how man can live and prosper within his resource means.

And a goodly part of that concept lies in the things we have been talking about for the past days—the concept of forests not as an end in themselves nor just as wood factories, valuable as that aspect can be, but as the most important single agency for the protection of earth and water and the crops men live by.

Gifford Pinchot often warned against making prophecies that may come due in your own lifetime, for occasionally they had an undignified way of backfiring. But I should like to hazard a prophecy that two of the most potent factors in the forestry movement of this generation are the growing emphasis on multiple use and America's growing forestry leadership throughout the world. Both have in common this sense of widening horizons, widening responsibilities, and usefulness. The ultimate benefits may not end in the work itself, important as this may be, but in the implications.

In multiple use the implications lie in increased awareness of how essential a part forestry plays in human living. It lies in the lesson of how man can and must live in harmony with his environment—and that would seem to be the ultimate aim of all conservation. In world forestry the implication may not only be in bringing a new security to peoples who have almost lost hope, but in cementing a little closer the sorely needed bonds between nations and peoples.

Men have long agreed that the greatest of life's satisfactions lies in the conviction of the worthwhileness of the work we do. Well, if that's so—and I believe it is so—then we who work in the realm of natural resources are fortunate, once we raise our eyes and foresee tomorrow's far-off effects in terms of what we are doing today. For in the hands of the forester, the range and land manager, lies the fate of eternal and indispensable things—the good earth and all its varied harvests, and all they can do to make a better life for man.

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Forestry Education and Research in Russia

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PERHAPS THE READER'S first question to an American recently returned from Russia is "Why did you go?"; in my case, from curiosity over reports by others on education and research in Russia. Also, because no American educator in forestry had yet attempted to size up the programs in Russia. But, still more, because for years I have been haunted by that final prophetic paragraph in Volume 1 of "Democracy in America," written by Alexis de Tocqueville in 1835:[1]

"There are at the present time two great nations in the world, which started from different points, but seem to tend towards the same end. I allude to the Russians and the Americans. . . . The Anglo-American relies upon personal interest to accomplish his ends and gives free scope to the unguided strength and common sense of the people; the Russian centers all the authority of society in a single arm. . . . Their starting-point is different and their courses are not the same; yet each of them seems marked out by the will of Heaven to sway the destinies of half the globe."

Russia today gives one the impression of a country moving very rapidly. It is this very speed of movement that causes progress in some fields to outstrip that in others. Behind it all, of course, is purposeful direction, yet much must be due to the vagaries of circumstance and the human talent that is brought to bear on or develops in connection with the different activities of the people.

Another feature that is evident to the western visitor is the strong urge for individual recognition. The present social and economic structure does not afford a wide choice of consumer goods or activities by which an individual might gratify personal taste and thus achieve some personal distinction among his fellows. Official recognition is given to those who excel in work accomplishment, sport, scholarship, or in service to the Party. This recognition takes the form of public commendation, extra scholarship stipends, promotions, conferment of decorations, special trips and excursions, and elevation to positions of power and prestige within factories, government, and universities. Achievements of merit are recognized in all levels of activity. Rewards are especially desired by the young people. The rapid growth in education, industry, and government affords opportunities for early and rapid advancement. This tends to build faith in the government and economic system among youth. The intellectual, from student days, is given preferred treatment and, hence, a heavy stake in the social structure as it exists.

Before continuing, the writer wishes to state his own limitations for his subject. He spent but 25 days in Russia during the summer of 1958. He entered as a tourist and depended on such contacts as he could establish through members of the Food and Agricultural Organization, foresters of his own acquaintance who had recently visited Russia, and Intourist. His only previous personal contact was with Academician Sukachev whom he had met in Dehra Dun in 1954 and in Oxford in 1957. He visited the Ministry of Education in Moscow, the Lenin Library in Moscow, the Forest Research Institutes in Leningrad and Kharkov, the Forest Institute of the Soviet Academy of Sciences near Moscow, the Forestry Technical Academy and Institutes at Leningrad and Moscow, the Ranger School near Kharkov and the Agricultural College at Kiev. Throughout, he was dependent on Intourist interpreters and guides except for short trips to stores, museums, and parks.

None of the foresters he visited spoke English, though some could understand it when spoken slowly and several read English. A few spoke German, so some conversation was carried on in German without an interpreter. Some places he hoped to visit he failed to make connections usually because of lack of time or insufficient advanced notice. He visited none of the Communist countries except Russia.

Russian Forestry

The Soviet Union occupies about one-sixth the land area of the world, some 2,000,000,000 hectares (5,000,000,000 acres). Half of this land is forested of which some 700,000,000 hectares are considered commercial. Russia, therefore, has one-tenth of the world's forest land perhaps 26 percent of the commercial forest land. A forest exploration completed in 1956 carried on by both aerial and ground work reveals a total standing timber volume of 75,000,000,000 cubic meters giving an average of 107 cubic meters per hectare or about 17 cords per acre. The annual growth is estimated at 800,000,000 cubic meters per year which is twice the

[1]de Tocqueville, Alexis. Democracy in America, Vol. 1, p. 434. Alfred A. Knopf, Inc., New York. 1946.

annual cut. Growth rate is said to have increased about 15 percent since 1924 due to applied forestry measures, largely regeneration of lands cut over to remove mature timber. Growth per hectare per year varies from 1.3 to 10.0 cubic meters and higher. Accessible forests are divided into three categories for management:

1. Protection forests and shelterbelts. Soil, water, and crop protection are the major objectives. Timber cutting, if permitted at all, is incidental.

2. Forests near large cities or other densely populated areas. On these, cutting is restricted mostly to dead trees. No more may be cut than grows annually.

Together these two classes make up not more than 12 percent of total forest land.

3. All other is commercial forest land. On such forests cutting may be carried out at the discretion of the Ministry of Timber Industries with few, if any, restrictions. Russia has sufficient untouched forest land that she apparently need not be overly concerned about exploitive cutting practices. Moreover, much of the land reproduces naturally to desirable timber trees provided fire is excluded. Future stand composition is, however, a concern of research men. Little attention, at present, appears to be given to thinning. Clearcutting at maturity is the rule on Class 3. Temporary or portable logging camps apparently are used except in settled areas.

The Educational Pattern

The general plan is to provide every citizen with 10 years of general education. Those qualified for higher education can complete the program in 10 years and then must compete in general examinations for entry into higher education—universities, polytechnical institutes, and special technical institutes such as those offering forestry training. Admission to higher education in any field is not affected by the student's nationality, race, religion, sex, social origin, or property status. Every citizen from 16 to 35 years of age has the right to higher education provided he can pass the highly selective entrance examinations.[2]

TABLE 1.—COLLEGES OF FORESTRY IN THE U.S.S.R.

College location	Appropriate number of students in residence
Leningrad	3,500
Moscow	3,500
Archangel	3,000
Sverdlovsk	3,000
Krasnoyarsk	3,000
Minsk	1,500
Yoshkar-ola	1,200

Seven years of education are compulsory. It is planned to extend this to 10 years by increasing the number of technical schools to develop more skilled workers, artisans, technicians, and foremen. General supervision over higher education is the function of the Ministry of Higher Education. Technical education is supervised by a special branch of the Ministry headed by N. S. Taracheshnikov in Moscow. The writer visited Chief Taracheshnikov who stated that forestry education in Russia is carried out in three major types of institutions of higher learning. The first is the forest technological institutes of which there are seven. These correspond roughly to the forestry colleges of the United States. They are variously referred to as academies and technical or technological institutes. To simplify discussions for the American reader, these will henceforth be referred to as colleges.

The second type is the forestry department or departments in a college of agriculture such as at Kiev. These correspond roughly to departments of forestry in agricultural colleges in the United States and will be referred to as forestry departments.

The third is the technical school for subprofessional personnel that gives instruction such as is given in the United States and Canadian ranger schools. These will, therefore, be referred to as ranger schools, though it should be kept in mind that their programs may include much not a part of instruction in United States and Canadian ranger schools.

All forestry colleges and departments follow the same curriculums. These are determined by the Ministry of Higher Education after due consideration and perhaps initiation by committees of the faculties from the several colleges and departments. Change seems the order of the day in Russian curriculums, the same as in the United States. The current curriculums were revised two years ago.

The forestry curriculums in common with those of engineering, agriculture, and general university programs require five years for completion. A complete forestry technical institute or college offers six separate five-year curriculums. There are seven such colleges (Table 1).

Not all have the full complement of six curriculums at present, but it is planned that eventually they will have. Each of these may have in addition students studying by correspondence. At Moscow, for example, 1,500 students are registered in forestry curriculums by correspondence. Admission is on the same terms for students by correspondence as resident students, with a minor exception to be noted under subprofessional education.

In addition to these forestry technical institutes or colleges are the forestry programs at agricultural colleges. Forestry is offered in agricultural or other academies but none has the complete six curriculums. The Ukrainian Agricultural Academy at Kiev has three forestry faculties or departments offering general forestry, logging, engineering, and wood technology and utilization. The student body numbers currently 1,050 in resi-

[2] Chuvahin, Dmitri S., Ambassador of the U.S.S.R., Ottawa, Ontario. Growth of technical education in Russia takes enormous strides. Pulp and Paper Magazine of Canada, Vol. 59, No. 2, pp. 62-64. February 1958.

dence and 800 taking work by correspondence. Other forestry programs are offered in agricultural institutes located at Voronezh, Lvov, Briansk, and Tashkent.

The number of students in forestry curriculums at agricultural colleges was not ascertained. The total number of students pursuing forestry curriculums is believed to be considerably in excess of 20,000, perhaps as many as 25,000. Still, the number of graduates annually is said to be insufficient to meet current needs.

Organization Within the Individual College

Each college is headed by a director with three assistants—one for teaching, one for research, and one for general business management. The director has overall responsibility for all operations and is particularly responsible for budget, increases in faculty, liaison with important officials in government and the timber industry and other duties affecting the overall welfare of the institute, its faculty, and students.

The college will have up to six faculties, each responsible for one of the curriculums. The individual faculties are each headed by a dean who is responsible for general supervision of the work of the faculty and the curriculum. Each faculty has a certain number of chairs, ordinarily headed by a professor who has responsibility for work in a specific field, such as plant physiology. The chair may have several docents and assistants in addition to the professor.

Curriculums

The six basic curriculums, each of which is taught by a separate faculty, go considerably beyond those of forestry colleges in any other country to the writer's knowledge. These are listed and explained below, together with the number of chairs in each at the Leningrad Academy.

1. *Curriculum in forest engineering (forest management).*—Nine chairs. This is the usual forestry curriculum as known in western Europe and America. It prepares men for work in afforestation, reforestation, protection and care of forests, and forest management in general. Three optional programs may be offered under this curriculum — forest management, park and landscape forestry, and forest amelioration. The park forestry option is offered at Moscow and Leningrad and is said to be popular with pretty girls who prefer city life to life in the small community. A complete curriculum was formerly offered in landscape architecture at Leningrad, but this has now been reduced to an optional sequence in the forest management curriculum. Forest amelioration pertains primarily to swamp drainage, shelterbelt planting and care, and soil improvement measures. About one-third of the forest lands of Russia are on poorly drained lands.

2. *Curriculum in engineering economics (forestry economics).*—Six chairs. This subject covers broad economic questions such as the forest resources of Russia, their location, nature and ease of exploitation; merchandising of forest products; the economics of the timber industry as a guide to decision on operating possibilities and costs; location of wood-processing and pulp and paper plants and like questions; and determination of norms for forest workers under field conditions of varying difficulty.

3. *Curriculum in mechanical work in the forest (logging and lumber manufacture).*—Eight chairs. This program covers the mechanization of woods operations, particularly road building, logging, and timber floating; the organization of logging operations and the management of the operation; railroad construction and operation; and sawmill operation.

4. *Curriculum in mechanization of woods and mill operations.*—Six chairs. This program deals with machine building and design. It covers the development of logging tractors, road building machinery for woods operations, sawmill machinery and machinery for wood-processing plants including automation. Instruction includes metallurgy, machine design, plant layout and installation, heat engines, etc.

5. *Physical use of wood (wood technology and utilization).*—Six chairs. This covers the material in wood structure, timber physics and mechanics, mechanical wood processing, and use of wood as wood.

6. *Curriculum in chemical technology of wood (wood chemistry).*—Eight chairs. This covers wood distillation, wood hydrolysis. pulp and paper technology, and other chemical products of wood including naval stores.

The programs of the first two curriculums would correspond to the work usually given in western European and American forestry schools. The fifth curriculum would also be covered, in part or in whole, by American schools. The third and sixth programs are offered in a few schools and the fourth in none.

Graduates of the Russian schools may work for the Ministry of Agriculture that has responsibility for land management as such but not for logging, or the Ministry of Forest Industries that covers timber exploitation and use. Pulp and paper technologists would, of course, enter this industry.

Russian foresters queried about the necessity for the program in mechanization defended it stoutly, stating that foresters could not afford to leave such work to mechanical engineers as they were unfamiliar with the working conditions that forest and wood-working equipment must meet.

Forest Management Curriculum

The forest management curriculum followed in 1958 included the subjects listed below with the num-

ber of study hours required for each:

Subject	*Hours*
Social science	390
Higher mathematics including calculus and statistics	182
Foreign language	240
Physics	160
Chemistry—inorganic, analytic, and organic	260
Botany, physiology and microbiology	280
Graphics	70
Surveying	150
Meteorology and climatology	60
Soil science and geology	180
Agriculture	50
Mechanics (technical)	80
Genetics and tree selection	70
Dendrology	130
Sylvics and silviculture	360
Mensuration	150
Forest pathology and entomology	180
Forest biology	50
Mechanization of forest operations	150
Construction and floating	160
Economics and management	130
Safety and fire control	40
Physical culture and sport	120
Other subjects including practical work and thesis	358
Total	4,000

A total of 39 examinations must be passed. These are offered twice yearly. At the close of the academic work a student must spend four to five months working in a forest under a forest supervisor or in an appropriate wood-working industry. He must then prepare a thesis covering in detail the work in the district or plant to which he was assigned and prepare his own plan as to how the work is now done and how it might be improved. This thesis must then be defended before the state examination commission. Upon successful defense he is awarded his diploma.

Post-Graduate Study

The forestry colleges are also responsible for post-graduate programs. The candidate program corresponding to our M.S. degree requires about two years following graduation, and the Doctor's degree four or more years. The Forest Technical Academy at Leningrad had 90 post-graduate students but not all were in residence. The doctor candidates must pass comprehensive examinations in three or four fields then prepare and defend a thesis involving original work. Each must complete his program within a specified time or lose his student status and stipend. Forestry departments have few post-graduate students.

Student Admissions

To be admitted as a student a candidate must have successfully completed the 10 years of preliminary schooling or completed a sub-professional program in forestry with two years' practical experience. He may then be admitted to an entrance examination. Only one out of four applicants is accepted at the college at Moscow and presumably this ratio holds elsewhere. Applicants failing admission may work two years in the forest and reapply. Such men are given priority over other applicants provided they successfully pass the entrance examination.

Women students are admitted on the same basis as men—a strict merit basis as judged by examination. About 30 percent of all forestry students are girls. They may enter any curriculum they wish; they are, however, discouraged from entering forest management, mechanization, and logging engineering. They make up about 60 to 70 percent of the student body in economics, wood technology, and wood chemistry.

Student Prerequisites

Students in good standing receive a stipend of 300 rubles per month ($72 at official rate of exchange) the first two years, and 450 rubles the last three years.[3] From this they pay about 15 rubles per month for dormitory rent. Meals are furnished at low cost (20 to 30 rubles per month). The remainder is for clothing, books, and incidentals. As most prices are considerably higher in Russia than in the United States this does not admit of luxurious living, but it does meet essential expenses. The student is respected by the faculty and the citizenry as a whole. Discipline is carried out, in part, by the student organization.

Dormitories in the forestry institutes are a long way removed in appointments from those available in the University of Moscow. Rooms which house four students are each furnished with four cots, four straight chairs, one table, one reading lamp, and a place to store clothing. Rooms were tidy, especially those occupied by girls. Students share a common shower room and toilet. Men and women students were housed in the same building but in seperate sections off common corridors. It was not considered out of order for men and women to study together in dormitory rooms. Special rooms are set aside for television, radio, reading, and lounging.

Marriage is common during the fourth and fifth years though some students marry earlier. The differences in careers to be followed sometimes leads to stress on the marriage ties.

Of the students that enter, about 90 to 95 percent graduate. Less than two percent are dismissed for low scholarship. Student discipline as well as social and family pressure apparently impel students to work industriously. The stipend takes care of economic needs so financial difficulties need not be encountered.

Student-faculty relations seemed somewhat remote. The sheer numbers prevent intimacy, which apparently is not encouraged. Nevertheless, some faculty members take concern for students and obviously enjoy being among them on an informal basis. Others pass without any sign of recognition much as in large American universities. Student-faculty ratio is about 11 to 1 at Leningrad, about 400 on faculty for 4,500 students. This is said to be normal.

[3] Students low in scholarship have their stipend withdrawn until they return to good standing. It was not ascertained whether or not students of parents receiving high incomes were eligible for state stipends.

Upon graduation all students are placed in jobs. Often these jobs are at the same post where they carried out their thesis work assignment. Beginning salaries are about 700 rubles per month which is above that of the average non-intellectual worker. Once an individual becomes a student, therefore, he joins the intellectual class economically as well as professionally, and need never know from first-hand experience what it is like to live the life of a laborer.[4]

Physical Plant and Equipment

The Forest Technical Academy at Leningrad is 153 years old and some of the buildings date from its founding. These leave much to be desired by modern standards. Even the newer buildings are far below the Moscow University standard in classroom, lecture hall, and laboratory facilities. Few American schools would consider them adequate. Audio-visual aids were mostly in the form of charts. One exception should be noted. The Russians are developing some excellent educational films. I was shown four at Leningrad. One dealt with development of planting and fire plows and plows for drainage, one with mechanized skidding equipment, one with automation in a furniture factory, and a final one in color with the life history of defoliating insects and bark beetles. All were excellent and would be a credit to any college. Apparently only one room, aside from the auditorium, is equipped for motion picture projection at Leningrad. Equipment for metallurgy and mechanization seemed good but outdated for the most part. Faculty research equipment, on the other hand, varied from inadequate to excellent depending, in part, on the department and individual.

Subprofessional Education

The Soviet Union operates about 30 schools to train technicians for forestry work. Four are located in the Ukraine. The largest at Tchuguev near Kharkov was visited. This school offers three curriculums—forest ranger, forest and farm machinery, and bookkeeping for agriculture. Both resident and correspondence course students may register upon passing the entrance examination. Enrollment averages are shown in Table 2.

TABLE 2.—ENROLLMENT AVERAGES FOR TECHNICAL SCHOOL AT TCHUGUEV

Course	Resident students	Correspondence students	Proportion of girls
	Number	*Number*	*Percent*
Forest ranger	240	400	25
Bookkeeping	240	160	90
Mechanics	180	none	5
Total	660	560	25 to 30

Students may enter the forest ranger program after seven years of public schooling. They require four years to complete the program. The other two programs are open only to students completing the tenth year of regular schooling. These require two and a half years to complete the program. Students taking work by correspondence require a year longer to graduate. They spend one month of each year in residence at the school before taking their examinations.

The curriculum is set by the Ministry of Higher Education, but latitude is permitted in the fourth year to present work especially pertinent to the region in which the school is located.

The curriculum includes general subjects—history, literature, foreign language, mathematics, physics, and chemistry for a total of 1,500 hours. Special subjects are: botany; soils; surveying; dendrology; planting; drainage; protection against insects, diseases, and fire; mensuration; logging; light construction; and forest management totaling 2,178 hours, of which 775 are spent in laboratories.

Field study covers 155 days additional of eight hours each in the special subject fields of forestry. In addition, 102 days of work experience in forestry are required. Graduates may then take the state examinations in forestry and dendrology, silviculture, logging, and forest management for a state certificate.

About 50 percent of the graduates continue their education at the forestry colleges to qualify as a forest engineer. They may enter immediately if they have taken the program by correspondence, or after two years' working experience on the forest otherwise.

Students vary in age from 14 to 30 years with the oldest being 56. Resident students receive a stipend of 140 rubles per month the first year with regular increases up to 200 rubles for the last year. None is dismissed for low scholarship. The graduates form an important source of students for the professional forestry schools.

The equipment is modest but suited to the purpose. The faculty numbers 42 at Tchuguev all with engineering or forestry degrees. The faculty handle both resident and correspondence students.

Forestry Research

Research in forestry is the responsibility of the forestry technical institutes (forestry colleges), the forest research institutes operated by the Ministry of Agriculture and corresponding to the forest and range experiment stations operated by the U. S. Forest Service, and the Forest Institute of the Soviet Academy of Sciences. All are financed directly by the government.

The All-Union Party Congress has set up 10 major objectives in forest research. These are:

1. Increase in the productivity of Russian forests.
2. Reforestation of cutover lands.
3. Selection, introduction, and propagation of promising tree species.
4. Shelterbelts.
5. Soil erosion control.

[4]The manuscript for this article was prepared before the recent edict was announced requiring that all students, except those with very high records, hold a full-time job during their first two years as a university student. This will modify considerably the prerequisites of students, and also restrict further the total to be admitted.

6. Productive use of sandy soils.
7. Protection of forests against insects and diseases.
8. Mechanization of forest work.
9. Economics of forestry.
10. Mechanics of logging.

Forest Research Institutes

The forest research institutes with their many branch stations (the Ukrainian Institute has 11) concentrate their projects in these 10 fields of work, and to a certain extent the forestry colleges and the Academy of Sciences tend to do likewise. As the fields are broadly stated, latitude exists for adjustment of individual programs.

Research institute projects are reviewed by a central committee on research once a year in Moscow that gives general approval to the program. This committee has representatives from research institutes, forestry colleges, and the Academy of Sciences. This serves to coordinate the research work of the several agencies.

Main responsibility for research seems to rest with the research institutes that attempt to give coverage to the various regions of the Union. The organization of the Ukrainian Forest Research Institute at Kharkov will serve as an example. This has responsibility for forest research throughout the Ukraine. Its work is organized in 15 departments and laboratories: (1) forestry, (2) hydrology, and swamp drainage, (3) afforestation of river banks and lake shores, (4) silviculture, (5) shelterbelts, (6) soil erosion control, (7) afforestation of sandy lands, (8) tree seed testing and physiology, (9) selection and introduction of species and clones, (10) protection from insects and diseases, (11) mechanization in forestry, (12) economics and organization of forestry, (13) classification of forests by types, (14) plant physiology and biochemistry, (15) microbiology, agricultural chemistry, and soils.

The Institute has 11 work centers throughout the Ukraine. The work is organized in 34 major projects under the 10 major headings given above. The projects include research on hybrid poplars and oaks, logging, water regimen, soil physics and chemistry, silviculture of the Steppe Region and other types, use of herbicides, provenance, nursery practice and vegetative propagation, soil management in nurseries, tree introduction, structure of shelterbelts, erosion control in valleys and mountains, use of sandy soils, insect and disease control, mechanization of planting and work in mountain forests, norms for workers, incentives for workers, and mechanical problems in logging. The Institute has 130 scientists of which 52 are stationed in Kharkov. The total of scientists, technicians, and assistants is 480.

Mechanization includes such work as developing a planting and drainage plow capable of making a double furrow clearing a line 2.5 meters wide, with furrows width 75 cms. at depths varying from 10 cms. to 1 meter; tractor and helicopter mounted spraying equipment for control of insects, fire, and for spreading herbicides; tree-planting machines. Airplanes are used extensively in control of forest operations. They parachute fire fighters, as we do, but equip these men with explosives for fire line construction. A four-man team can build 1 mile of fire line in 3 hours with explosives. Tank trucks and tank carrying tractors spray a solution of calcium chloride on going fires. They disclaimed any use of borates for fire control.

Examples of research work displayed were impressive. Tests of the wind-retarding effects of various designs of shelterbelts seemed particularly important. A form of electrical resistance anemometer was used, and tests made under active field conditions. The development of a sand trench for testing the design of plows was also evidence of efforts to get basic engineering design data. The plow was pulled at constant speed with recorders for charting the vertical and horizontal forces required. Most significant has been the completion of the forest exploration and forest map of the U.S.S.R.

Research in the Forestry Colleges (Technological Institutes)

Professors in the forestry colleges spend half time in teaching and half time in research. The research projects may be assigned by the state or more usually are proposed by individual faculty members. These are reviewed by the chair concerned and next by the Faculty Scientific Council composed of director, assistant director, dean, and heads of chairs. If this approves, the assistant director for research is asked for necessary funds and equipment or, if large, the request may go to the Ministry of Education. The projects approved seem mostly to fall within one of the 10 major fields set up by the Party committee. Financial support seems to be meager for biologic projects but generous for those in mechanization. This is, in part, due to sponsorship of research by the Ministry of Forest Industries provided this ministry believes the research will be useful to it. The usual pattern would be to start a project from the college budget, then, if it showed promise, appeal to the forest industry for support. Industry managers are said to be hard bargainers.

Examples of projects that the writer discussed with faculty members of the colleges are the following:

Studies of sap movement by means of radioactive tracers; also accumulation of phosphorus at actively growing regions.

Effect of mycorrhizal on uptake of phosphorus.

Light requirements and length of day experiments using an advanced-design pyrometer.

Studies of veneer core stock made from particle board and solid lumber.

Studies of hardening steel to be used in machines for the timber industry.

Development of logging machinery, particularly skidding tractors. Machines under test were designed to have trees felled across them, bound to the tractor, then pulled to a landing eight to 10 at a time. A further elaboration included a

special arm for holding and binding the tree and a circular saw to fell it.

Automation of furniture manufacture. A machine to plane, mould, cut tenons all in sequence operation has been developed. This has increased output of a furniture factory to 3,000 chairs per day.

Other work in mensuration, silviculture, forest planting is under way.

The Forest Institute of the Soviet Academy of Sciences at Uspenskoe, Near Moscow

The Forest Institute of the Academy is under the general direction of the Biological Science Division of the Academy of Sciences. The director is Academician Sukachev noted for his work in forest geobotany and typology. It was founded in 1944 in Moscow and moved to its present location in 1956. There have been collected here some of the ablest Russian scientists in forestry, and they have been furnished good laboratory and field equipment and capable assistants.

The Academy Forest Institute has two Academicians—Sukachev and Nikitin, three correspondent academicians, 13 professors, several doctors, 60 candidates in science that correspond to our M.S. graduates. The total staff numbers 300.

The Institute has 14 laboratories and departments covering the several fields of forestry.[5] The laboratories and departments and their leaders are as follows:

1. Silviculture, Professor Zhuckov.
2. Forest plantation, V. Y. Koldanov.
3. Forest management and economics, Dr. H. P. Motovilov.
4. Forest hydrology and climatology, Professor A. A. Malchanov.
5. Forest soils, Professor S. V. Zonn.
6. Physiology and ecology, Professor L. A. Ivanov.
7. Forest geobotany, Academician V. N. Sukachev.
8. Research on forest marshes, Professor N. I. Pyavchenko.
9. Forest microbiology, E. V. Runov.
10. Forest zoology, P. M. Raphes.
11. Forest phytopathology, Professor N. N. Lavrov.
12. Forest tree selection, Acclimatization, and seed investigations, Professor L. F. Pravdin.
13. Wood technology, Professor Y. M. Ivanov.
14. Wood chemistry, Professor N. I. Nikitin.

The laboratory of wood chemistry is currently located at Leningrad.

The Academy Forest Institute has seven experimental stations located in the following regions of the U.S.S.R.:

1. Serebryanoborskoe at Kuntsevo district, Moscow region.
2. Tellerman at Borisoglebsk, Bolashov region.
3. North at the North railway, platform Kadnikovsky, Vologodskaya region.
4. Arshan-Zelmen at Sadovoe, Sarpinsky district, Stalingrad region.
5. Janibek at St. Janibek, West-Kazakhstan Kazakh, S.S.R.
6. Ural at Gniloe, Priuralsky district, West-Kazakhstan region, Kazakh, S.S.R.
7. Yakutsk at Yakutsk.

The 40 volumes of transactions of the Forest Institute of the Academy of Sciences of the U.S.S.R. make an impressive contribution to the several fields of forestry covered. Among current research activities are the following projects or study areas: the principles underlying forest types; phytosociology; history of the formation of forests in Russia as revealed by geologic material; oil content of pine seeds; sex regulation in plants through control of temperature at time of bud formation; plant hormone production; polyploidy as induced by colchicine; vegetative propagation and its influence on growth and early seed production; geographic races of oak, pine, fir and larch; influence of forests on chemical and physical properties of soil; transpiration, evaporation, infiltration, and runoff as influenced by forest composition, age, and cutting practices; watershed management studies; width of shelterbelts as related to water infiltration. Gaged watershed studies are carried on at 10 stations. In silviculture they have learned how to increase forest productivity by 15 percent, but practice has not yet caught up. They need industries to use thinnings and low-grade species. Regeneration of old-growth forests through cutting is studied on the various soil types. In microbiology they are studying the bacterial and fungal flora of soils as influenced by regions, types, species, and climatic zones, and the effect of this flora on litter and root decay. Mycorrhizal studies are carried on in the Steppe region. In wood technology studies are concentrated on the physics of wood and how this is affected by various physical factors.

The laboratories of the Forest Institute are still new and being fitted up. Some of the equipment is of excellent quality and eventually it is expected that all will be of the best available. Present equipment includes good research microscopes, sensitive balances, an electron microscope, a photothermic pyrometer for studying changes in soil under heating, and other precision research equipment. The Institute plans to issue a journal soon.

The Academy of Sciences Forest Institute is the highest level forest research institute in the U.S.S.R. Its activities cover not only Russia but work in China as well in collaboration with Chinese scientists. The workers are mature and competent, the projects fundamental and significant, the budget and equipment adequate, and the supporting staff well trained. It serves to give tone and leadership to forest research throughout the Union.

Appraisal

The American forester will be curious to know how education and research in forestry of the U.S.S.R. compares with that in the United

[5]The Forest Institute of the Academy of Sciences of the U.S.S.R.

States. In this respect he will be joined by his equally curious Russian counterparts. The author offers his opinion with great reservation because of the limited time he spent in Russia and lack of first-hand acquaintance with Russian forestry literature, Russian students, and practicing foresters.

The students seem young, eager, serious minded, and obviously industrious. They are highly selected by competitive examinations. The curriculums cover the subject well. The teachers and students both work under the handicap of large classes, heavy work loads, and limited facilities and teaching aids. It is the writer's opinion that the graduate of the Russian forestry college is not better equipped overall than the graduate of the American forestry college, though he is better schooled in mathematics and language and certain other subjects. The writer believes that the stronger forestry colleges in the United States are producing a better-educated and trained forester than the Russian colleges at the time of graduation. Russian post-graduate education, though it may take somewhat longer, is believed to match U. S. standards if not exceed them. The doctoral program requires longer and higher general level of performance than in the United States.

In research, America has considerable margin in terms of volume of work. This is believed true of both fundamental and applied research, particularly the latter. Only in the field of mechanization is Russia clearly ahead of American foresters, and this is primarily because America looks chiefly to equipment manufacturers to do such research. However, in the Academy Forest Institute and in the annual meeting of specialists in forestry research, the U.S.S.R. has organizations for giving stature to research and for coordination of effort not now existing on a formal basis in the United States. The potential for such coordination is high in that new projects of promising nature can be given widespread support. Coordination, however, can lead to a tendency towards standardization of research that is the very antithesis of efforts that lead to new discoveries. The writer is not aware that this represented any more serious threat to current development of original ideas in research under the Soviet system than it does in America. After all, research administrators and those responsible for awarding research grants are likely to behave similarly in all countries. The recognized patterns and methods that have yielded satisfactory results tend to receive major attention. The Russians seem to be as interested in fundamental research as the Americans, they are desirous of developing new research talent, and they are looking for methods that will lead to new approaches and advancement of science.

The Russians appeared eager for exchange of publications and visits with American and other scientists. They seem to recognize more than we do the handicap of isolation in science. An exchange of workers would be obviously helpful—more so to them than to the western world because of free exchange within the western world. Russian forest scientists are familiar with the work of American foresters up to about 1940 but have little knowledge of our younger workers. They receive *Forest Science* and the JOURNAL OF FORESTRY at the forestry colleges and research institutes, but virtually no other American forestry literature. The abstracting service covers much more. The Lenin Library in Moscow receives practically all the important periodicals in forestry and many of the bulletins. These are available on loan or photostatic copy to workers elsewhere. Forestry literature from other western countries is also scarce in the colleges and research institutes though on the whole more is available than from the United States.

The writer believes firmly that both the United States and Russia would benefit from much greater personal contact between foresters and forest scientists of the two countries. The development of such contacts will take time. The first steps should be largely through organized tours rather than for many foresters to attempt individual travel in Russia. It takes time to make arrangements and to work out a planned schedule. Many Americans are traveling in Russia today and almost all report that developing contacts with institutes and individuals takes considerable time.

Student travel to Russia has much to recommend it, provided proper tours and general arrangements can be worked out in advance.

Looked at in the long-range perspective it seems inevitable that Russia will play a major role in forestry of the future. With some 20 percent of the world's forest wealth; a rapidly-developing industrial economy; and a generous supply of talented, well-educated, eager, young people her future role in world affairs will almost certainly continue to increase.

Encouraged by the fruits of western industrial society, she is surging forward with the avid intention to match and even to surpass the achievements of America. She has still far to go and great handicaps to overcome but neither is impossible to meet. Harnessing the enthusiasm of youth and the power of scientific knowledge, she is moving with impressive momentum. Both Russia and the United States need desperately to understand each other. The beginnings being made in the professional and scientific fields, let us hope, will expand rapidly to other cultural areas.

Effects of Sweetfern Rust on the Growth of Young Jack Pine in Northern Lower Michigan

Paul C. Guilkey,
Victor J. Rudolph,
and George Sheppard[1]

THE SWEETFERN BLISTER RUST (*Cronartium comptoniae* Arthur) is possibly the most common of the blister rusts on the pitch pines of eastern North America. Jack pine (*Pinus banksiana* Lamb.) is the most common primary host, although the rust also attacks pitch pine (*P. rigida* Mill.), lodgepole pine (*P. contorta* Dougl.), and many others of the 2- and 3-needled pines (*3*). The alternate hosts for this rust are sweetfern (*Comptonia peregrina*), and sweetgale (*Myrica gale*). Both shrubs are common throughout the ranges of the pitch pines, sweetfern on the dry sandy soils and sweetgale in swampy locations. The range of the rust is much the same as that of the two principal hosts, jack pine and sweetfern.

[1]Respectively, forester at the Lower Peninsula Research Center maintained by the Lake States Forest Experiment Station, Forest Service, U. S. Department of Agriculture at East Lansing, Mich., in cooperation with Michigan State University; assistant professor of Forestry, Michigan State University; and forestry aide, Lake States Forest Experiment Station.

FIG. 1.—The base of a jack pine badly cankered by *Cronartium comptoniae*. The blisters are covered with yellowish-white spores.

Spaulding and Hansbrough (*3*) observed that while the sweetfern rust is present throughout the range of jack pine, it is seldom a serious problem in natural stands. Occasionally it has been a problem in forest nurseries where sweetfern blister rust infections have resulted in seedling mortality of 20 percent. The greatest losses, however, have been in plantations, although in many cases the initial infection took place in the nursery before the trees were lifted for field planting. The most severe losses in Michigan have been observed in experimental plantations of lodgepole and ponderosa pine; in some of these, most of the trees have been killed.

The authors have found infections as high as 30 or 40 percent in jack pine plantations in Lower Michigan, but mortality losses have been small.

Usually the trees are infected near the soil surface and the damage occurs by girdling action. The early stages of infection are very difficult to detect except when the aecial blisters are present in May and June. On seedlings, a characteristic fusiform swelling often develops near the ground line. On trees 2 inches and larger, the rust usually produces a canker or depressed streak on the infected side of the stem (Fig. 1). The rough bark of jack pine makes even these cankers relatively inconspicuous except when the blisters are present.

The literature on sweetfern rust shows that it may cause considerable mortality, especially in nurseries, but does not assess its importance in trees not mortally in-

TABLE 1.—NUMBER OF TREES, AVERAGE D.B.H., AVERAGE HEIGHT, AND PERCENT OF INFECTION FOR THE FIVE UNTHINNED PLOTS

Original spacing	Number of sample trees		Average d.b.h. of sample trees		Average height of sample trees		Percent of sample trees infected
	Healthy	Infected	Healthy	Infected	Healthy	Infected	
Feet			*Inches*		*Feet*		
1½ x 1½	65	2	1.12	0.95	13.6	13.8	3.0
3 x 3	44	6	1.83	1.55	15.0	14.5	12.0
5 x 5	67	10	2.26	2.46	14.8	16.0	13.0
7 x 7	80	6	2.81	2.57	16.1	14.8	7.0
9 x 9	52	2	2.77	2.70	14.6	14.2	3.7

fected. This paper reports the effects of sweetfern blister rust on the growth and survival of infected trees in two sample jack pine plantations in the western portion of the Lower Peninsula of Michigan.

The first plantation studied is a 10-acre planting of jack pine established in 1941 near Wellston, Michigan. A 5x5 Latin square with 25 subplots of 0.4 acre each utilized spacings of 1½ x 1½, 3 x 3, 5 x 5, 7 x 7, and 9 x 9 feet. Local 1-0 jack pine was slit-planted in scalps. The soil is classified as Grayling sand and the topography is level. At the time of planting, the ground cover included a few small scrubby oaks (*Quercus ellipsoidalis* E. J. Hill), scattered clumps of Jerseytea ceanothus (*Ceanothus americanus*), prairie willow (*Salix humilis*), sweetfern, and various grasses and sedges. At the end of the first growing season all fail spots were replanted with 2-0 jack pine. Ten-year results of this study were reported by Rudolf (*2*) and 15-year results by Guilkey and Westing (*1*).

In the fall of 1954 a thinning study was superimposed on the original spacing study. Permanent 0.1-acre sample plots were located in the center of each 0.4-acre plot, and thinned to various spacings.

In five plots left unthinned, a systematic sample of the trees was measured to give comparative growth information. The sample was selected so the number of sample trees measured in the closer spacings would fall between the number measured on the 7 x 7- and 9 x 9-foot spacings where every tree was measured.

The sweetfern blister rust infection in this plantation was not noticed until the post-thinning mortality check was made in the spring of 1955. All previous work in the plantation had been done in the fall when the blisters that are so conspicuous in the spring were absent; the cankers of the rust are relatively inconspicuous on the rough-barked jack pine and therefore had escaped notice.

Mortality checks in the spring of 1955 and 1956 in the permanent sample plots in the thinning disclosed no mortality. However, the possibility of rust influencing the growth of the pine did cast doubt upon the validity of measurements taken in the tenth and fifteenth years of the plantation. Possibly an interaction between spacing and the rust might cause a significant effect on growth. Then, too, if the rust had affected growth, the infected trees might have been selected for cutting at the time the trees were marked for thinning. These reasons gave immediate need for a study of rust growth relationships.

The effect of sweetfern blister rust on diameter and height growth in this plantation is based upon data from the five unthinned plots. The 1954 remeasurements were used in the analysis. For each sample tree, the d.b.h. had been measured to the nearest 0.1 inch with steel calipers, and the height had been measured to the nearest 0.5 foot with an aluminum pole. In June 1956, each sample tree was carefully examined to determine whether or not it was infected with blister rust (Table 1).

In general, the number of trees infected with sweetfern rust did not constitute a very large segment of the stand on the unthinned plots. A further check of other plots, as yet unthinned, showed that the percent of infection over the entire spacing study ranged from 3.0 to 18.0 percent and was not correlated with spacing. All of the cankers were at or near the ground line, and no infections higher on the stems or branches were found. Apparently the trees had been infected in the nursery; therefore, the range of infection from plot to plot was more the result of chance than the original spacing.

The average d.b.h. of the infected trees appeared to be slightly less than that of healthy trees for all but the 5 x 5-foot spacing, but an analysis of variance showed these differences lacked statistical significance. The height relationship between infected and healthy trees (Table 1) does not form any regular pattern. The analysis of variance showed no statistical significance for the height differences.

From these data it was concluded that the effects of spacing on growth, as reported in 1951 and 1956, had not been confounded by the sweetfern blister rust. However, since the number of infected trees was small (Table 1), it would be unwise to conclude that the rust would not affect the growth of jack pine unless the results of this study could be corroborated by at least one additional study.

A second jack pine plantation, about 10 miles away from the spacing study, was found to be heavily infected with the blister rust. This plantation had been established in 1941 with 1-0 jack pine stock, slit-planted at 6 x 6-foot spacing. The planting stock came from the same forest nursery as did that for the spacing study.

Five 0.1-acre sample plots were laid out at random within the plantation and all surviving trees were examined and measured as in the spacing study. Data for this plantation are listed in Table 2. All of the cankers were at or near the ground line, indicating that the trees probably had been infected in the nursery.

TABLE 2.—NUMBER OF TREES, AVERAGE D.B.H., AND PERCENT OF INFECTION IN A 16-YEAR-OLD JACK PINE PLANTATION

Plot	Number of trees		Average d.b.h.		Percent of trees infected
	Healthy	Infected	Healthy	Infected	
			Inches		
1	36	28	2.84	2.50	44
2	29	14	3.17	3.27	33
3	56	29	2.46	2.44	34
4	26	44	2.81	2.90	63
5	51	18	3.88	3.51	26
Total	198	133	3.04	2.84	40

As in the spacing study, the differences between the average diameters of healthy and infected trees were not statistically significant. From these data it appears that any real loss of radial growth is confined to that portion of the stem covered by the canker. Cross-sections taken from infected trees showed normal growth at points a few inches above the visible edge of the cankers (Fig. 2). Unless the rust cankers serve as avenues of entrance for wood-rotting fungi, it is not anticipated that there will be any important loss of wood quality or usability because the injury will be confined largely to the stump area.

Although the sweetfern rust had no real effect on diameter or height growth in the spacing study, the possibility remained that it might have influenced the selection of the trees to be cut in the 1954 thinning. This was tested by examining all residual trees in the thinned plots and all sample trees on the remaining unthinned plots. The incidence of infection on the thinned plots ranged from 2.4 percent to 18.0 percent and averaged 9.0 percent. On the unthinned plots the range was from 3.0 to 17.4 percent and averaged 11.0 percent. These differences were not significant, and it seems safe to assume that the trees free of the rust had not been favored in the thinning.

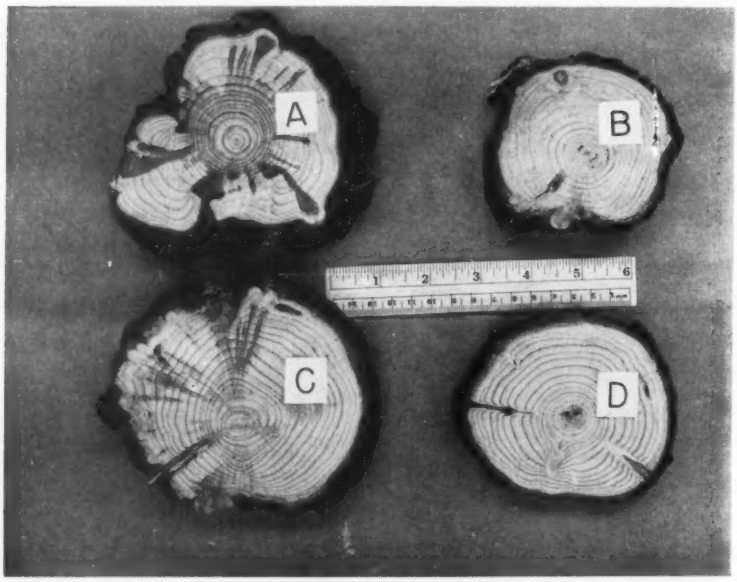

FIG. 2.—Cross-sections through infected jack pine stems. *A*, a section through the center of a large canker, showing the distorted growth of the stem. *B*, a section through the same stem at the extreme top of the canker, showing only minor distortion of the annual rings on the lower edge. *C*, a section through a severe canker, and *D*, a section from the same tree as *C*, taken 4 inches above the canker, showing normal growth of the stem.

Summary and Conclusions

Previous studies of the sweetfern blister rust have shown significant mortality from the disease among the pitch pines, but have not shed light on the effects on growth of the trees that reach sapling size.

Measurements in a 15-year-old plantation of jack pine in Lower Michigan, originally established as a test of spacing and later transformed into a test of thinning, provided an opportunity to compare the growth of healthy and rust infected trees.

Height and diameter measurements showed no significant difference between the growth of healthy and rust infected trees. Survival counts in the fifteenth and sixteenth years showed no mortality caused by the blister rust. This plantation had been marked for thinning before the presence of the rust was discovered. Apparently the rust had no influence on the general appearance of the trees that would influence marking since no significant difference was found in the incidence of infection between the thinned and unthinned plots.

An examination of a heavily infected jack pine plantation of the same age, located 10 miles from the spacing study, also disclosed no differences in diameter growth attributable to the rust.

Apparently the effect of the rust on radial growth of jack pine is largely limited to that part of the bole in the immediate area of the canker.

This study indicates that a sweetfern blister rust canker at the base of a jack pine tree does not affect the growth of the tree. However, the exposed dead wood of the cankers may serve as an entrance court for wood rotting fungi that will result in loss of wood and perhaps breakage as the bole is weakened. These plots will be kept under observation so that such later influences can be detected. Unless there are such developments, no important loss of wood quality or usability is expected because the canker injury is confined largely to the stump area.

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Basal Area Thinning Guides for Thinning in the South

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A PROBLEM OF increasing importance, as areas of second growth timber advance to a commercial product size, is the development of adequate spacing guides for thinning. To be most useful these guides must be relatively simple in field application yet not sacrifice the "art" aspects of the science of thinning. Since much timber is marked for thinning by relatively inexperienced foresters, it is desirable that guides be such that they can be taught readily and that work under them can be checked precisely at a reasonable cost.

In 1942 Chapman[2] published the results of an extensive study of thinning based on the Elk Pasture plots at Urania, Louisiana, and others in Arkansas. Examination of the Elk Pasture showed that thinnings which resulted in maximum annual increment also resulted in the development of crop trees of lower quality than would be desirable where a management objective was the production of high quality sawtimber as a final crop. The leave stand on some of these plots appeared to have a basal area of 53 percent of normal. The study showed that after a basal area of about 80 percent of normal was passed in the growth of untended stands, annual basal area growth declined progressively until it practically ceased at normality. The study showed little correlation between either age or size of trees

[1]Management analyst, Internal Audit Unit.

[2]Chapman, H. H. Management of loblolly pine in the pine-hardwood region in Arkansas and in Louisiana west of the Mississippi River. Yale Univ. School of Forestry Bul. No. 49. 1942.

TABLE 1.—LOBLOLLY PINE THINNING GUIDE.[1] BASAL AREAS INCLUDE ALL TREES 4 INCHES D.B.H. AND OVER

	Leave basal area (sq. ft.) for site index—						
Age	60	70	80	90	100	110	120
15					58	63	71
20		61	67	72	76	81	85
25	66	73	78	82	85	89	94
30	74	80	83	87	90	95	99
35	79	84	87	89	93	98	103
40	83	86	89	92	96	100	105
45	85	88	91	94	97	102	108
50	87	89	92	95	99	104	109
55	88	91	93	96	100	105	111
60	89	92	95	97	101	106	112
70	90	93	96	99	103	108	113
80	91	94	97	100	104	109	115

[1]Adapted from U. S. Forest Service. Volume, yield, and stand tables for second-growth southern pines. U. S. Dept. Agric., Misc. Pub. 50,202 pp. 1929. (57 percent of normal.)

TABLE 2.—LONGLEAF PINE THINNING GUIDE.[1] BASAL AREAS INCLUDE ALL TREES 4 INCHES D.B.H. AND OVER

	Leave basal area (sq. ft.) for site index—							
Age	40	50	60	70	80	90	100	110
20					51	56	60	64
25				52	61	66	71	74
30			50	60	68	74	78	82
35			55	66	75	80	84	88
40		46	59	71	79	85	89	92
45		50	63	75	83	89	93	97
50		52	66	78	87	92	97	100
55		54	68	80	89	95	100	103
60		56	70	83	91	97	102	105
70		59	73	85	95	100	105	109
80	44	60	75	87	96	103	108	112
90	46	61	76	89	98	105	109	113
100	46	62	77	89	99	106	111	114

[1]Adapted from same source as Table 1.

TABLE 3.—SHORTLEAF PINE THINNING GUIDE.[1] BASAL AREAS INCLUDE ALL TREES 4 INCHES D.B.H. AND OVER

	Leave basal area (sq. ft.) for site index—						
Age	40	50	60	70	80	90	100
20				58	70	80	83
25		55	69	82	88	91	92
30	55	72	85	92	93	95	96
35	68	83	92	94	96	97	98
40	77	89	93	95	97	98	99
45	82	90	93	95	97	98	99
50	84	91	93	96	97	99	99
60	86	91	94	96	97	99	99
80	87	92	94	96	97	99	99

[1]Adapted from same source as Table 1.

TABLE 4.—YELLOW-POPLAR THINNING GUIDE.[1] BASAL AREAS INCLUDE ALL TREES 5 INCHES D.B.H. AND OVER

	Leave basal area (sq. ft.) for site index—						
Age	60	70	80	90	100	110	120
25				51	57	62	66
30			54	62	68	74	79
35		54	64	72	80	86	91
40		62	73	82	90	96	102
45	55	70	82	92	100	107	113
50	62	78	90	100	110	117	124

[1]Adapted from McCarthy, E. F. Yellow-poplar characteristics, growth and management. U. S. Dept. Agric., Tech. Bul. 356, 58 pp., 1933. (64 percent of normal.)

and basal area increase. This is to be expected, since normal yield tables for the southern pines show a slow increase with age and a rather rapid increase with site index. Conversely, the basal area of yellow-poplar, an extremely site-sensitive species, normally increases rapidly with age, as well as site.

To check the basal area-age-site relationship and to achieve a reasonable compromise between quantity and quality growth, stands left after thinning by experienced foresters in six southern states were checked. It was found that the basal area of the leave stands rather uniformly approximated 57 percent of the normal basal area, regardless of the site or the age at which the thinnings were made. Tables 1, 2, and 3 were prepared and have been successfully and widely used for training, current self checking during marking, and supervisory checking. The leave basal areas are simply 57 percent of those in the normal basal area tables. Similar tables at 80 percent of normal basal area can be used to determine the time to thin. Possibly a better method is to determine the percent of normal basal area in a stand, then set the time for thinning on the assumption that the stand will approach normal at the rate of 4 percent a year. For example, a southern pine stand of 68 percent normal basal area would be scheduled for thinning three years after examination

$$\left(\frac{80-68}{4}=3\right).$$

In applying these principles to other species, care must be taken to make sure that the available normal tables are accurate. Application in yellow-poplar resulted in thinnings that were considered to be too heavy, particularly in light of the tendency of this species toward epicormic branching. A check of the normal table revealed that it had been constructed many years ago at a time when second growth stands of a good age spread were not available for measuring. The table was checked in a number of stands and found to average 13 percent below the basal area of fully stocked groups. To compensate for this discrepancy, Table 4 was raised from 57 percent to 64 percent of the available "normal" basal area table. This table has not yet been used sufficiently to be considered validated; nor has Table 5 for upland oaks. The oak table was calculated at 60 percent of normal on the basis of observation and may need correction after testing.

Use of these five tables for training, self check during marking, and the final check of marked stands is simple. First, age and site class are determined by conventional methods. Where data is available, especially in young stands, site class is better determined by soil examination than by use of height and site curves, since this avoids errors which may have been made in the lower age extensions of the curves. The leave basal area is read from the table for the predominant species. If one species of a mixed stand is to be favored, the leave basal area for this species is used. Weed trees which will not be removed by stand improvement or logging must be included in the leave basal area.

Marking is then done in the dense portions of natural stands. Major attention is given to quality of leave trees rather than to spacing. At each thinning opportunity is afforded to remove the stems which (1) are diseased, (2) are deformed, (3) have ascending branches that will cause large knots, or (4) show a tendency toward epicormic branching, or have other undesirable characteristics. At the same time the marker can make desirable stand composition improvements.

After a group of trees are marked, the basal area of the stems left is measured from the center of the densest place in the group. The leave basal area may be read di-

TABLE 5.—UPLAND OAKS THINNING GUIDE.[1] BASAL AREAS INCLUDE ALL TREES 0.6 INCHES D.B.H. AND OVER

	Leave basal area (sq. ft.) for site index—				
Age	40	50	60	70	80
20	36	40	41	43	44
25	41	44	47	48	50
30	45	48	50	53	54
35	47	50	53	55	57
40	49	53	56	58	59
45	51	55	58	60	62
50	53	57	60	62	64
55	55	59	62	65	67
60	58	61	65	67	69
65	59	64	67	70	72
70	61	66	69	72	74
75	63	68	71	74	77
80	65	70	74	77	79
85	67	72	76	79	82
90	69	74	78	82	84
95	71	76	80	83	86
100	73	79	83	86	89

[1]Adapted from Schnur, Luther G. Yield, stand, and volume tables for even-aged upland oak forests. U. S. Dept. Agric. Tech Bul. 560, 88 pp., 1937. (60 percent of normal.)

rectly with a three diopter wedge prism or by some other method. If check plots are used in small timber they should usually be only about 1/20 acre. By making this check several times a day the marker will soon find himself consistently leaving stands very close to the selected table density. In any post-marking check, care must also be taken to measure the leave basal area in the denser groups. Often stands will contain small areas that are not up to the desired density. The marker can do nothing about them except to resist a natural tendency to mark a poor tree or two as he walks through them.

Summary

Because of wide variations in soil capabilities and the natural density of stocking which accompany advancing timber age, systems of determining and checking densities left after thinnings should be based on site and age. A simple yet accurate method of doing this is to thin to a leave basal area which will be a percentage of the normal basal area for a given site and age. This permits greater attention to the quality of leave trees than any individual-tree spacing system. It also avoids the errors of thinning too lightly on poor sites and failing to use the full capability of good sites, as occurs when all marking is aimed at leaving a fixed basal area or an average distance between trees over large areas and at all ages. Using this system, forest managers can quickly train young foresters in this complicated and difficult field of timber marking, and consistently achieve leave densities appropriate to any management objective.

Profits from Pruning Ponderosa Pine In Relation to Pruning Diameter

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PRUNING to obtain clear wood on the lower portion of forest trees has been practiced on a limited scale for many years (*4*). It became an important operation in the management of national forests after the enactment of the Knutson-Vandenberg Act in 1930. This act provided a means for retaining a portion of timber-sale receipts to finance pruning and other stand-improvement work on national forest land. The Forest Service has used K-V deposits in certain areas to expand the pruning program to insure a future supply of high-grade lumber and veneer. More recently, the Agricultural Conservation Program has also stimulated pruning in privately owned woodlands by cost-sharing with the owner.

The pruning policy of the Forest Service may differ somewhat from that of private woodland owners. For instance, longer rotations are possible on federal lands because more emphasis is placed on long-range benefits than on obtaining immediate returns. Smaller interest rates are also usually applicable to federal investments as large profits are not the primary objective. The future needs of the country and the stabilization of industries using clear wood are major considerations in the federal program (*6*).

Pruning is a comparatively new tool in American forest management, and its increased use has raised many economic and technical questions. Much of the literature published on the subject is based on data obtained from pruning in plantations (*4, 7, 9*). However, most of the pruning of ponderosa pine (*Pinus ponderosa* Laws.) financed by K-V deposits is confined to natural all-aged forests. Many of these stands are made up of small even-aged groups with enough age variation among the groups to constitute an all-aged forest.

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TABLE 1.—VOLUME OF CLEAR WOOD AT MATURITY ON 16-FOOT BUTT LOG OF PRUNED TREES

D.b.h. when pruned	D.i.b. when pruned[1]	Bark allowance	Utilization allowance	Diameter of core	Scale of core[2]	Net scale clear wood on 24″ log[2]
	Inches				*Board feet*	*Board feet*
6	4.8	0.5	1.0	6.3	31	372
8	6.4	.8	1.0	8.2	53	350
10	8.0	1.0	1.0	10.0	79	324
12	9.6	1.3	1.0	11.9	112	291
14	11.2	1.5	1.0	13.7	148	255
16	12.8	1.9	1.0	15.7	197	206
18	14.4	2.5	1.0	17.9	253	150

[1]Assuming 80 form factor.
[2]Scribner log rule.

Pruning Natural Stands Compared to Plantations

The cost of pruning and the method of selecting crop trees are markedly influenced by the conditions under which trees grow in natural stands compared to the entirely different situations encountered in plantations.

Natural stands have a much greater variation of age and diameter classes than plantations and, consequently, have fewer trees per acre available for pruning at any one time. Some areas may be occupied by trees too large for pruning or by reproduction too small for pruning; other areas may be poorly stocked, may contain natural openings, or may be occupied by spe-

TABLE 2.—COST OF PRUNING TREES CARRIED TO MATURITY

D.b.h. when pruned	Total time to prune	Cost at $2.50/hr.	Mortality	Total initial cost	Time to maturity	Cost at maturity[1]
Inches	*Hours*	*Dollars*	*Percent*	*Dollars*	*Years*	*Dollars*
6	0.16	$0.40	34.5	$0.61	120	$11.81
8	.20	.50	32.5	.74	110	11.19
10	.23	.58	30.5	.83	100	9.80
12	.25	.63	28.5	.88	90	8.11
14	.28	.70	26.5	.95	80	6.84
16	.29	.73	24.5	.97	70	5.46
18	.30	.75	22.5	.97	60	4.26

[1]Total initial cost carried to maturity at 2½ percent compound interest.

cies unsuited to pruning. Some stands of desirable age, size, and density contain no prunable trees because of deformities, mistletoe infection, disease, and porcupine damage. Even when other conditions approach optimum, natural spacing is rarely suitable for maximum utilization of the site by crop trees.

With the possible exception of reforestation on scattered burned areas, ponderosa pine plantations are usually more accessible than natural stands. Consequently, the rough topography, poor accessibility, and fewer prunable trees per acre result in a higher pruning cost in natural stands than in plantations.

The Problem: What Size Trees to Prune?

Regardless of whether pruning is done by federal or private enterprise or in natural or planted stands, personnel administering the work are constantly faced with two major problems: (1) What are the maximum and minimum size trees that can be pruned at a profit? (2) When available funds are not adequate to finance pruning of all crop trees, what size trees should receive first priority for pruning in order to produce the most clear wood per dollar invested? The expansion of federal pruning programs coupled with private industry's increasing interest indicates these problems will become more pressing in the near future.

Studies to date have shown that trees pruned at very small diameters have small knotty cores and are usually pruned at a minimum cost per tree (*4, 5, 9, 12*). On the other hand, each successive inch in diameter growth produces more wood than the preceding inch and is carried fewer years to time of harvest. This indicates that pruning larger trees may be more profitable. In order to resolve these two opposing concepts, it was necessary to develop a method of determining the most profitable size trees to prune.

The Method

Ponderosa pine grows under a great variety of conditions and has a very extensive range. Therefore, any method for finding the most profitable size trees to prune must be flexible enough that those administering a pruning program can apply it to local conditions in any part of the species' range.

The proposed method uses the costs of pruning trees of various diameters as a base. These costs are projected with interest to the date of maturity. Profit is computed by comparing the costs at maturity with the increased value realized as a result of the clear wood produced by trees of each diameter class. This method, applicable to the various growth conditions of ponderosa pine, may be easily applied to other species.

The procedure used three tables: Table 1 shows the amount of clear wood produced, by diameter classes; Table 2 shows the cost of pruning with interest at maturity; Table 3 compares the costs in Table 2 with the value of clear wood from Table 1 to determine the profit.

In order to set up the tables for a specific area, it is necessary to know the average rate of diameter growth,[2] size of crop tree expected as determined by growth rate and rotation, mortality data, interest rate, form factor or taper tables, bark-thickness tables, difference in value of clear versus knotty logs or lumber, and cost of pruning trees by size classes.

How the System Works

The use of the tables is best illustrated by applying data for a given locality and following the computations to their completion. Most of the data used in the following tables were obtained from the "Financial Aspects of Pruning" by Shaw and Staebler (*11*) and are typical for poiderosa pine in the Northwest. The data were inserted in the tables for the sole purpose of showing how the system works. No attempt is made to determine the economical size trees to prune for any specific area; only to demonstrate how it may be done.

Table 1 is used to compute the size of the knotty cores resulting from pruning trees of each diam-

TABLE 3.—PROFIT AT MATURITY FROM PRUNED TREES, BASED ON $40 PREMIUM FOR CLEAR WOOD ON A 16-FOOT BUTT LOG

D.b.h. when pruned	Clear volume produced	Premium value for clear volume	Total cost at maturity	Profit[1]	Profit at percent of cost[2]	Rate of return[3]
Inches	*Board feet*	*Dollars*			*Percent*	
6	372	$14.88	$11.81	$3.07	25.9	2.7
8	350	14.00	11.19	2.81	25.1	2.7
10	324	12.96	9.80	3.16	32.2	2.8
12	291	11.64	8.11	3.53	43.5	2.9
14	255	10.20	6.84	3.36	49.1	3.0
16	206	8.24	5.46	2.78	50.9	3.1
18	150	6.00	4.26	1.74	40.8	3.1

[1]Premium value for clear volume less total cost.
[2]Profit divided by total cost at maturity.
[3]Compound interest earned from investment in pruning (total initial cost) over period required (time to maturity) to obtain premium value.

[2]The rate of growth for some species may decrease as the trees approach maturity, even under management (*10*). In such cases, the rate of growth should be averaged only for the years between pruning and harvest.

eter class. The volume of these cores is subtracted from the scale of the pruned butt log at maturity to give the net scale of clear wood produced by pruning.

In this example, only trees pruned to a height that will produce a clear 16-foot log are considered, but other lengths may be substituted. Form factor 80 is used to compute the scaling diameter at the small end of the 16-foot log. As the trees are assumed to be pruned flush with the bark, full bark thickness is added to the scaling diameter. A utilization allowance of 1 inch is added to the knotty core to compensate for the clear wood that cannot be utilized. The total board foot scale of the core—with no deduction for slabs—is subtracted from the scale of the butt 16-foot log of the mature crop tree.[3]

In this example, the crop tree is assumed to mature at 30 inches d.b.h. The butt 16-foot log of this size tree would measure 24 inches d.i.b. at the small end and contain 403 board feet. The volume of clear wood produced from logs pruned in each diameter class is obtained by subtracting the gross scale of knotty cores from the total gross scale of 403 board feet.

The pruning time in Table 2 for each size class is taken from Kachin's (*7*) report on work in the Whitman National Forest. The cost of pruning various sized trees is obtained in Table 2 by multiplying the cost per hour by the total time to prune trees of each diameter class. Cost is increased by losses resulting from mortality, giving a total initial cost per tree. All trees are assumed to be growing at the rate of 2 inches in diameter per decade until they reach 30 inches d.b.h. (*1, 3, 10*). An interest rate of 2½ percent is then applied to the total initial cost to obtain the total cost of carrying the pruned trees to maturity (*8*).

The additional income or premium expected from a pruned log is expressed (Table 3) as the difference in selling price between clear and knotty wood for the volume of the clear wood produced as a result of pruning. The Forest Service may base its premium on the value of clear logs, whereas the timber-owning sawmill company may base its premium on the substantially greater difference between clear and knotty lumber prices. It is difficult to estimate the future market value of either pruned logs or clear lumber. Consequently, present-day trends and prices must be used.

In Table 3, a $40 per thousand premium based on log value is used to convert the volume of clear wood produced in each diameter class (Table 1) to a dollar value for that clear wood. The cost at maturity as calculated in Table 2 is subtracted from the dollar value of the clear wood to determine the profit. The profit is then expressed as a percent of cost to obtain the investment-return relationship.

Profit may also be expressed by using rate of return as a measure. Instead of assuming a fixed interest rate, the rate of interest actually earned may be determined from the initial pruning cost, the premium value of the clear wood produced, and the time required to grow it. This rate of return is probably the most realistic measure of profit when different time periods are involved.

Discussion and Summary

Under the conditions assumed, trees from 6 to 18 inches in diameter may be pruned at a profit. Consequently, the upper diameter limit would be determined by the practical possibilities of utilizing the decreasing size of the clear shell formed over the knotty core. An 18-inch tree would have only a 3-inch shell of clear wood when the tree reaches 30 inches. It would be difficult to obtain the full estimated premium value of $6 from pruning a tree of this size unless the butt log were peeled for veneer. However, an additional profit may be added to all diameter classes if the clear wood is utilized from the slabs of the pruned logs.

Trees ranging from 12 to 16 inches would yield the highest rates of interest under the conditions assumed here (Table 3). Therefore, these larger trees should receive first priority if limited time or funds will not permit pruning all crop trees. If the smaller trees are pruned first, many of the larger trees may grow beyond the upper limits before future pruning is possible. On the other hand, a 10-inch tree would still be prunable at 16 inches in diameter after a 30-year delay.

Different results may be obtained by assuming other conditions when inserting data in the tables, but the principles remain the same. In general, the rate of growth and long-term interest charges have a greater influence on the amount of profit than the cost of pruning. Therefore, in many instances it may be better economics to prune large-diameter fast-growing trees, even though it costs more to prune them.

Only the financial aspect of pruning are emphasized here. Decisions as to the best size tree to prune must also be tempered by silviculture, the effect of destructive agencies, and the local utilization practices for any particular species or area. Consequently, all aspects of forest management and economics should be considered when deciding whether to prune small or large size trees. Regardless of which diameter classes show the most profit, some additional advantages of selecting small or large size trees are as follows:

Advantages of pruning small-diameter trees.—(1) Trees may be removed later in an intermediate thinning at a profit, thereby allowing greater flexibility in the management of stands. (2) Stands become more adaptable to future changes in the rotation. (3) An added premium may be obtained from the wider boards available from logs with a small knotty core. (4) The premium obtained from pruning is measured by the differ-

[3] The log rule used to compute volume by the Scribner scale was $V = 0.79^2 - (2D + 4)$. When slabs are included in the scale, merely drop the term $(2D + 4)$, which is approximately equivalent to slab deduction, and use $V = 0.79D^2$. Smith (*12*) achieves the same results by applying the formula 2.568 (D + 0.75) to figure slab volume for International ¼-inch log rule.

ential (in price received) from lumber grades in unpruned trees compared to the high percentage of clear lumber recovered in pruned trees. The lower grades in unpruned trees are found near the center of the tree, resulting in a greater differential in this area. This may result in a somewhat higher premium for trees with small knotty cores. (5) under very intensive management, it is possible to grow more clear wood per acre because the small core would allow maximum production for each tree.

Advantages of pruning large-diameter trees. — (1) Less time from pruning to harvesting and realization of returns for the investments. (2) Less risk of damage to pruned trees by subsequent logging of large old-growth timber remaining in the surrounding stands. (3) Older and larger trees show more expression of dominance, permitting more accurate crop-tree selection and less chance of selected trees becoming suppressed. (4) Unpruned trees of the same size that are competing for space may be profitably removed in a commercial thinning at an earlier date. (5) It is seldom necessary to remove live limbs when pruning the larger trees. Consequently, loss of growth from crown reduction is rare (2). (6) The largest trees in small even-aged groups are the fastest growing and add clear wood at a rapid rate. (7) The entire 16-foot butt log may be pruned in one operation.

It is evident that there is more to pruning than merely cutting the limbs off trees and waiting for a handsome profit. The returns from pruning depend on many factors, some of them virtually unknown. The selection of crop trees is in itself a complex and difficult art. However, pruning tables similar to those described here could be useful guides in deciding basic policies for both public and private land owners. These tables can be prepared for any area or set of conditions by following the system outlined in the foregoing.

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SAF President George A. Garratt and Executive Secretary Henry Clepper (seated *L* to *R*) are shown with Floyd Iverson and Reed W. Bailey, co-chairmen for the 58th annual meeting of the SAF at Salt Lake City, Utah.

Increment Core Technique and Preventing Core Shrinkage[1]

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THE SWEDISH increment borer has been employed for an increasing number of uses over the years. Modifications of technique for these new purposes have led to the publication of many notes on the manipulation and care of this tool and the cores obtained by it. Still another method of handling cores will be considered here but in view of the scattered reports in the literature, a brief review of these would appear to be desirable first.

Devices for preparing cores by planing or sanding are considered by several authors. Dunning (*3*) merely trims the surface by simple planing with the core clamped in a walnut block. Patterson (*10*) devised a slightly more elaborate unit of brass which may also be used for counting. This unit suffers from being of rather short dimension, however. Lumsden and Whyland (*9*) present a relatively simple razor blade trimmer for field use. Cuno (*2*) also uses a razor blade unit for splitting cores. And Reineke (*11*) presents a considerably refined instrument which is capable of planing cores into flat units such that they may be viewed with transmitted light. This is important for accurate counts with wood such as birch and beech.

A number of devices for reading increments have been considered. These range from V-blocks with a ruler attached as presented by Dunning and Fenska (*4*) to a highly refined unit with a micrometer feed mechanism by Patterson.

For the storage and transport of cores, a number of devices have been prepared. Many, such as those of Hall (*6*), Fritz (*5*), Cuno, and Reineke, depend upon the grooves or holes in corrugated board. Another type utilizing a cloth roll is presented by Taylor (*13*). For extreme problems in maintaining moisture and thereby reducing shrinkage, Cuno advocates using glass tubes with the cores sealed in with a neutral liquid filler.

Hornibrook (*7*) appears to have made the only thorough study on the changes of size of increments due to drying and their relative recovery with rewetting. His work indicated that errors due to rewetting can often produce greater errors than mere drying. He worked with ponderosa pine and found notable differences in the changes of winter and spring cores. Errors after sap flow were less.

Particularly troublesome cores in trees where ring differential is not clear are dealt with by Reineke, Stewart (*12*), and Hornibrook. These latter two authors present techniques for the use of phloroglucin in staining cores to accentuate growth rings. Kase (*8*) presents a very brief note on the use of hematoxylin and saffron for aiding in ring counts of black birch. This method did not serve for red maple but was not attempted on other woods.

Two authors have done notable service in dealing with the general care and use of borers. Bauer (*1*) considers the field techniques and the tools for clearing plugged instruments. Reineke presents in detail the appropriate means of sharpening and storing coring tools.

It seems unfortunate that more information has not been presented in the literature. With the great numbers of cores taken, it is certain that many helpful techniques have been developed which should be made available to others. The mere fact that cores are utilized for so many different purposes should not deter one from presenting at least a brief note on the method.

The present paper offers a technique suitable for certain highly specialized cases. In particular, it is intended to minimize the chance of shrinkage changes and, where this factor becomes very significant, it is believed that the slightly more complicated procedure will be well worth the additional effort. The present technique also provides for convenient counting and measuring as well as permanent storage. In addition, there is no chance for cores to become intermixed—the code data stay with the core.

Prior to field sampling, hardwood strips are prepared. These may be selected to suit the particular assignment but scrapwood from heavy packing cases or crating used for shipping glass proved to be quite suitable and had the additional advantage of being free in a region where good hardwood is not easily obtained. This stock was 3/8 inch thick and was finished on one side. Strips were cut lengthwise to the grain 1 3/8 inch wide. Each strip was then grooved a quarter of an inch from each edge with the groove depth very slightly greater than the radius of a core and *very* little wider than a core diameter. These strips were then cut to a variety of lengths depending upon the expected lengths of the cores to be taken. An excess of several inches in length proved convenient.

For field use, these strips, a plastic squirt bottle of polyvinyl glue, some C-clamps and heavy rubber bands are needed. When a core is taken, a strip is selected and glue is run down the length of one groove. The properly oriented core is then transferred to this groove and forced into place. The code data are marked *on the side* of the strip and another core taken. When two cores are in a strip, the clamps are utilized with a blank strip to in-

[1]Part of the work on which this report is based was aided by a grant from The American Academy of Arts and Sciences. The author wishes to express appreciation for their support.

sure that the cores are firmly set into the glue throughout their entire length. The purpose of the dual grooves becomes evident as additional cores are taken. The strips can be built into packets of six or eight and once the clamps have been used to set the cores into the grooves, the rubber bands may be employed to maintain the pressure. With a single groove, this stacking would not be possible.

Properly prepared cores which fit snugly into the grooves are securely glued on three sides. This closeness of fit, the relatively great surface area and the roughness of the surfaces makes the use of most glues satisfactory. However, one should not use those with solvents incompatible with water since fresh wet cores will not "take" with these. The wood of the strip has many times the volume of the core and, being cut with the grain, is far stronger and little influenced by minor fluctuations in humidity. Strips recently wetted or of green lumber should, of course, not be used until dry. Prior to use storage of the strips in the area where measurements are to be made will reduce even the minute error slight humidity changes might make.

Cores put up in this manner may be set aside indefinitely. However, to prepare for counting, a drum or disc sander can be used to cut the core even with the face of the strip. The relatively large surface of the strip tends to reduce the hazards of sanding too deeply. Even with careless handling and with the use of very coarse grits no problem was encountered in removing the occasional cross grooves produced by machine sanding through the excess core and into the strip.

Finishing should be done with light grades of finishing papers by machine or hand. Most woods do not require extreme care but in some of the woods where increments averaged a fiftieth of an inch it was necessary to finish with 480 grit wet or dry paper using kerosene or paint thinner as a medium. At this stage, the strips may be sawn in half lengthwise if separation of individual cores is desired.

One feature of this technique is that the integrity of the cores can be retained even when these come out in segments. If an incomplete core is removed, it should be placed in the groove oriented as though the extractor had remained underneath. When an additional increment is removed it can be fitted in with the same orientation so that the spacing error is trivial.

Staining procedures are not prevented by this method but one might find it worth while previously to use a sealer on the strips to prevent waste of the dyes. Varnishing of sanded strips did not seem to help and it made the touching up of critical areas difficult. One should test samples of a particular kind of wood before attempting the use of such coatings.

In the particular problem for which these strips were devised, counts for total age of trees were needed as well as accurate measures of the annual increments. A binocular dissecting type microscope was fitted with an eyepiece micrometer. Once this was calibrated, measurements could be made with great accuracy.

Age was marked with a very sharp pencil on the strip beside the core. A small mark was used for five year intervals, a larger one for twenty-five years and the hundred year intervals were marked with the number. With this system, interruption in counting does not require a complete recount and any date can be readily located at any time.

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The Cover.—The 1957 National Community Christmas Tree erected on the Elipse before the White House was a white spruce cut at Big Falls, Minn., from the lands of Ray Warner and Ed. Wilkowski. It was selected, harvested, and shipped to Washington, D. C., under the sponsorship of the Minneapolis Junior Chamber of Commerce with the cooperation of the Minnesota and Ontario Paper Company. The tree was 70 years old, 60 feet tall, with a 24-foot crown diameter.

Notes

A Key to the Native Coniferous Tree Seedlings of the Quetico-Superior Area[1]

In the course of ecological and forestry research at the Quetico-Superior Wilderness Research Center in northern Minnesota, workers often have difficulty in distinguishing the species of young tree seedlings. To aid in identification, a study of the features of the seedlings of woody plants was undertaken. From this study was developed the following key to the coniferous species.

A similar study of the seedlings of deciduous species, including shrubs, is in progress and is expected to result in a companion key.

Seeds were obtained from known sources, subjected to recommended pre-treatments where necessary,[2] germinated, and grown in soil flats in a greenhouse. Seedlings grown under high light intensity and others grown under low light intensity were observed for consistent, identifying features until adult needle or twig characteristics could be distinguished. At least 100 specimens of each species were observed. The identifying characteristics thus obtained were compared with seedlings found growing in nature.

Morphological characteristics and cotyledon numbers and widths proved to be the least variable within species and were used as determining characters in the key below. Seedling height and cotyledon length are mentioned in the descriptions in order to give an idea of relative size. These are extremely variable, however, and the figures given are those found on greenhouse-grown plants and do not attempt to indicate the range possible in nature. Color of hypocotyl or cotyledons varied with growth conditions.

The key applies to seedlings in their first growing season.

A set of kodachrome slides illustrating the key characteristics is available for two weeks' loan on request. Reprints of the key, on durable paper, are available in reasonable quantity.

1. Cotyledons 2, very thin, linear, with blunt tips ..... *Thuja occidentalis*
1. Cotyledons 3-10 ..... 2.
2. Cotyledons consistently 3, thin, tips acute ..... *Tsuga canadensis*[3]
2. Cotyledons 4-10 ..... 3.
3. Cotyledons 15 mm. long or longer ..... 4. (*Pinus*)
3. Cotyledons less than 15 mm. long ..... 6.
4. Cotyledons 4-5, margins entire, tending to form an obtuse angle triangle in cross section ..... *Pinus banksiana*
4. Cotyledons 6-10 ..... 5.
5. Cotyledon tending to form an acute angle triangle in cross section, margins serrate ..... *Pinus strobus*
5. Cotyledon tending to form an equilateral triangle in cross sections, margins entire ..... *Pinus resinosa*
6. Tip of cotyledon blunt to emarginate ..... *Abies balsamea*
6. Tip of cotyledon acute to acuminate ..... 7.
7. Cotyledon ⅔ to 1 mm. wide ..... *Larix laricina*
7. Cotyledon ½ mm. or less wide ..... 8. (*Picea*)
8. Length of plant from soil to cotyledon 10 mm. or more, cotyledon broader than deep in cross section ..... *Picea glauca*
8. Length of plant from soil to cotyledon less than 10 mm., cotyledons forming equilateral triangles in cross section ..... *Picea mariana*

Thuja occidentalis L. Northern white-cedar. Cotyledons consistently 2 in number, less than 8 mm. long, 1 to 1½ mm. wide, tip blunt, margin entire, very thin in cross section; plant less than 10 mm. from soil to cotyledon; margin of first leaves entire; first leaves strictly 2-ranked.

Tsuga canadensis (L.) Carr. Eastern hemlock. Cotyledons 3 in number, 7.5 to 10 mm. long, ¾ to 1 mm. wide, thin in cross section; tip of cotyledon acute; plant from soil to cotyledon 5 to 10 mm.; first leaves serrate; stomata on cotyledon scattered, but on first leaves stomata in 2 rows on lower surface.

Pinus banksiana Lamb. Jack pine. Cotyledons 4 to 5 in number, 12 to 24 mm. long, ½ mm. wide; tip acute, margin entire. Height from soil to cotyledons 10 to 25 mm. Cotyledon forming an obtuse angle triangle in cross section.

Pinus strobus L. Eastern white pine. Cotyledons 7 to 10 in number, 20 to 30 mm. long, 1/2 to 1 mm. wide, forming acute angle triangles in cross section, tip acute, margins serrate; height of plant from soil to cotyledon 20 to 45 mm.

Pinus resinosa Ait. Red pine. Cotyledons 6 to 7 in number, 15

[1]The authors wish to express thanks to the Wellesley College Botany Department for use of greenhouse facilities and to Mrs. Mary Lynn Peterson for valuable technical assistance.

[2]See Woody-Plant Seed Manual, Forest Service U.S. Dept. Agric. 1948. 416 pp. for recommended treatments.

[3]Although not native to the Quetico-Superior area this species is common along the south shore of Lake Superior.

to 25 mm. long, ½ to ⅔ mm. wide, tips acute, margins entire, height of plant from soil to cotyledon 17 to 25 mm. Cotyledons forming equilateral triangles in cross section.

Abies balsamea (L.) Mill. Balsam fir. Cotyledons 4 to 5, rarely 3 in number, 5 to 11 mm. long, 1½ to 2 mm. wide, thin in cross section, tips blunt to emarginate; 2 rows of stomata visible on upper surface of cotyledon, apical bud reddish.

Larix laricina (DuRoi) K. Koch. Tamarack. Cotyledons 4 to 6 in number, 6 to 10 mm. long, 0.6 to 1.0 mm. wide, thinner than first leaves, tip acute.

Picea glauca (Moench) Voss. White spruce. Cotyledons 5 to 7 in number, 8 to 12 mm. long, 0.3 to 0.5 mm. wide, forming shallow triangle when cut in cross section. Height from soil to cotyledon 10 to 15 mm. Stomata visible on lower surface of cotyledon.

Picea mariana (Mill) BSP. Black Spruce. Cotyledons 3 to 5 in number, 6 to 10 mm. long, 0.3 to 0.5 wide, forming equilateral triangle in cross section, tips acute; length of plant from soil to cotyledons 7 to 10 mm. Stomata not obvious on cotyledons.

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A Low Cost Copying Projector

There are often occasions when the field man finds it desirable to transfer detail from a map or photo to a base sheet of some different scale. Generally, the problem is one of tracing or transferring by hand rather than one of making a photographic copy.

If this problem is of common enough occurrence, and if there is enough money available, it is possible to utilize such devices as the K.E.K. double reflecting projector, the Saltzman overhead reflecting projector. or the Autofocus manufactured by Reed Research, Inc.

However, such pieces of equipment may be prohibitively expensive unless continued use is made of them. The device described here is in no sense original or unique, but neither is it expensive.

Most agencies, and many individuals, have access to at least one good quality, 4×5-inch film pack camera such as a Graflex. With less than five dollars of hardware and virtually no tools or talent it is possible to make a mount so that by removing the frosted glass focusing screen from the camera the lens may serve as the projecting device.

Figure 1 shows the assembled mount with the camera in place. Detail is being transferred from an aerial photo to a transparent map sheet.

Method of Construction

The materials needed, other than the camera, are:

3—⅝ inch threaded rods, 36 inches long
12—⅝ inch coarse automotive nuts
6—⅞ inch washers
2—pieces of plywood ¾ × 24 × 24 inches
2—pieces of plywood 5/16 × 14 × 14 inches
1—piece of clear glass 14 × 14 inches

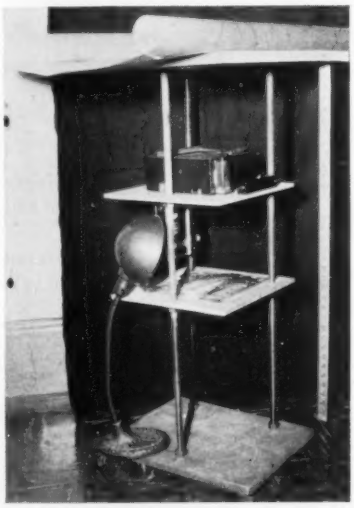

FIG. 1.—The copying projector with the camera in place and adjusted for transferring photo detail to an acetate base sheet.

There are no rigid requirements that the materials be of these specifications.

As Figure 1 indicates, the camera, with lens open and back removed, is suspended through an opening cut in one of the thin pieces of plywood. This hole is big enough to let the bellows assembly slip through but sufficiently small to allow the rest of the camera to rest firmly on the frame of plywood. No other support is necessary and the camera may be removed and reassembled in two or three minutes.

The threaded rods, located in a triangular fashion about 12 inches apart, form the frame of the mount. They are allowed to project slightly through holes bored in one of the 24 × 24 inch boards which will serve as a base. One nut tightened firmly on each surface of the base board will hold each rod firmly erect without need for other support.

The two smaller pieces of plywood, one of which will hold the aerial photo or other copy and the other the camera, are to be bored to accept the threaded rods. Make these holes about ⅞ inch in diameter to allow free movement over the rods and to permit some subsequent correction. By threading on three nuts and washers before placing each plywood square on the rods the squares can be supported firmly at any level on the rods. The requisite adjustment for copying can thus be made easily by raising or lowering the nuts. As these are threaded coarsely and well machined the adjustments can be made easily without tools.

A square hole, about 11 × 11 inches, should be cut in the remaining piece of plywood which will serve as the top of the projector table. The clear glass may be seated in, or placed over, this opening,

for the subsequent tracing of the projected detail. This top may be mounted simply by boring three holes, one half inch deep, into the lower side. These will receive the upper ends of the threaded rods and thus complete the mount.

By lighting the photo to be copied the image is projected through the camera lens and onto the base sheet above.

Adjustment of Focus and Scale

Obviously, this device demands that a translucent base sheet be used, as the image from the photo to be copied will be projected up from below, rather than down onto the map sheet as does an overhead projector or camera lucida such as the Sketchmaster.

There is only one position of camera lens and copy, in relation to the base sheet, where the projected detail is both in sharp focus and at the desired scale.

One of the laws of optics states that:

$$1/Do + 1/Di = 1/f$$

Where: Do = distance from lens to object being copied
Di = distance from lens to position of projected image
f = focal length of camera lens used for projection

This condition must be met in order to insure sharp focus of the image on the map sheet with a 1:1 enlargement ratio. It follows from this that a camera lens with a 5 inch focal length must be 10 inches from the object and 10 inches from the map sheet to provide a clear image because

$$1/10 + 1/10 = 1/5$$

In order to maintain focus for a given scale such as an *enlargement* ratio of 2:1 the lens must be closer to the photo being copied than to the base map to which detail is being transferred. The distances are calculated as follows for 2:1 enlargement:

$$1/Do + 1/(2)\ Do = 1/\text{f}.$$

This is written in this form because Di must be twice as great as Do for 2:1 enlargement.

For a 5 inch focal length:

$$1/Do + 1/(2)\ Do = 1/5$$

thus $Do = 7.5$ inches.

As Di must equal twice the Do for enlargement, Di will be 15.0 inches. With these distances set by adjusting the nuts on the threaded rod the detail will be transferred in focus and at the proper scale.

The nuts can be moved easily on the rod to the proper distances and any final focusing necessary can be done readily by the bellows adjustment knob on the camera itself.

If the distortion due to tilt in the original photo is apparent, either the camera or the photo holder can be adjusted at one or two of the threaded rods and the distortion rectified.

The necessity for setting the distance from the lens to either the object or the image is precluded by mechanical rationing in the more expensive overhead or table projectors but the adjustment by use of the formula is simple and the projector, for the price, satisfactory.

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A Note on the Fisher

There appeared in the October 1957 issue of the JOURNAL OF FORESTRY an article[1] in which we pointed out some of the ecological relationships between the forest, the fisher, and the porcupine. We noted that the State of New York, which has the largest fisher population in the Northeast, "has managed the fisher, as one of the rarer and more valuable furbearers, intent to provide annual harvests that would be attractive to the trapper and still insure an adequate seed stock to maintain and increase the species. Since 1949, the legal take has averaged 158 animals a year, with a peak of 230 in 1955.

New York's season and bag limits have been conservative enough to increase both the number of fisher and the size of the range. A continuation of this wise policy should bring about an increasingly rapid extension of the area occupied by this animal."

The Conservation Commissioner did open the season on fisher for the period October 25, 1957 through January 31, 1958, with a bag limit of three per trapper, in the area north of the Mohawk River. The resulting take of 428 set a record high, 226 percent above the reported 189 taken in the 1956-1957 season and 86 percent above the former high of 230. While the greatest number of pelts still comes from the core of the Adirondack Mountain region, the catch in the bordering counties was considerable. It is evident that the present season was conservative and that the fisher population and the range are both increasing. The animal has now extended its range well beyond the counties where legal trapping is permitted.

During the 1957-1958 season, the average price of thirty pelts was $16, ranging from $8 to $30; this is a decline from the level of the past several years. Therefore, the take of 428 fisher is not the result of a rise in price and a consequent increased trapping effort but rather may be presumed to be a normal catch from an increased population.

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Respectively, Cornell University, Ithaca, N. Y., and Albany, N. Y.

[1] Cook, David B. and William J. Hamilton, Jr. The forest, the fisher, and the porcupine. Jour. Forestry 55:719-722. 1957.

Points of View

Comments on Wilderness Preservation Policy

Charles H. Stoddard's[1] expression of opinion on the wilderness preservation policy adopted by the Council is excellent. I heartily second his comments. The attitude assumed by many foresters in relation to land included in wilderness areas (and national parks) is extremely narrow, short-sighted, and in general deplorable.

Most of the high mountain regions of the West dedicated to wilderness use possess a low average site quality for timber and a generally low average forage producing capacity. Where they do not, as in lower elevations at the edges of some areas, the commercially valuable existing forest stands frequently represent our last chance to retain reasonably adequate samples of natural climax and other relatively unmodified natural forest types. Who has the crystal ball adequate in quality to fix a price tag to these as museum specimens for ecological study and aesthetic appreciation, in say the year 2200 A.D.? The fact that some such stands will change rapidly, and others become prey to fire, windthrow, or other "disasters," is no argument for doing without them altogether. On the contrary, it may indicate in some instances a need for better located or more widely distributed samples of such inclusions.

The assumption by the predominantly timber-oriented forester that he alone is the best judge of the use of all wild land bearing forest cover does not seem sound. Thus we see some foresters closely associated with the recurrent clamor, often locally inspired, for the reduction of the forested portions of the Olympic National Park. In the meantime, a considerable acreage beyond the park boundaries is growing far less wood than it could. The direction of more thought, energy, and money toward intensive forestry on the more productive, accessible terrain outside park and wilderness area boundaries would obviate the "need" for jeopardizing the very small percentage of such high quality forest land in the nation which is dedicated to non-commercial ends.

J. Herbert Stone[2] describes the concept of multiple use very ably, but there are some of us who think that some sort of legislation such as that recently proposed (Senate Bill 1176) is necessary to assure a definite policy and status for wilderness areas. Mr. Stone mentions the phenomenal increase in population and the recreational pressures it is creating. It does not seem reasonable to expect that the demand for wilderness experience will grow less. By definition, a wilderness area has at least a kind of "critical mass." It cannot be subject to fragmentation and retain any of its essential characters. Uninspired application of the multiple use concept conceivably could permit logging and extensive heavy grazing use and highway construction—leaving only the rocky slopes and crags above timber line between roads as "wilderness"! I believe the public will suspect us less and respect us more if we seem less determined to favor the extraction of the last wood fiber and the last pound of flesh, or mile of road (even under "sustained yield") from all our remaining wilderness forests and ranges.

With all due respect to the judgment of the Council, I too would express dissent from their statement that ". . . the determination of areas suitable for wilderness and the boundaries thereof are responsibilities and functions of the personnel charged with administration of these lands." As Mr. Stoddard indicated, such a disagreement does not question the integrity of professional administrators, since they are executors, not formulators of policies. The provision of the proposed legislation for the creation of a National Wilderness Preservation Council would seem to be a good way to help to provide a policy meeting the approval of all concerned.

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An Object Lesson from the Philippines

Professionally trained foresters employed by the Philippine Forest Service in 1948 organized The Society of Filipino Foresters, whose aims and ideals are similar to those of The Society of American Foresters. The Philippine Forest Service has among its other activities secured the establishment and reservation of an extensive system of national parks, whose care and management fall within the scope and responsibility of the Forest Service, instead of in a separate bureau.

Thus it happened that the decisions on policy as to care and management of the forests within these national parks devolved upon the technically trained Filipinos who were in charge of the remaining commercial forests.

This body of experts was unhampered by the existence of sentiment, such as has been so outspoken in the United States, seeking to enforce a policy of complete neglect of such forests, and of letting the destructive forces of nature play havoc with the timber, through depredations of insects and disease.

[1]Jour. Forestry 56:607-608.

[2]Jour. Forestry 56:699-701.

The job of these foresters, as they conceived it, was to protect and preserve the health and beauty of the forests. So they formulated a policy, which reads:[1]

"Tree cutting in the parks should be under selective cutting management plan so that trees should be left untouched along the streams and roadsides for protection, shade, scenic and aesthetic effect which are enjoyed by many people. They are also used as cover and food of the wildlife. Cutting of timber in national parks should be allowed only when the trees could be removed without injury or disfigurement of the landscape; when the thinning of the forest or cutting of the vista will improve the scenic feature of the parks or where the destruction of trees is necessary to eliminate insect infestations or diseases common to forests and shrubs

H. H. CHAPMAN

[1]De la Cruz, Vicente and Benjamin B. Blando. Harmonizing forest recreation in multiple use forestry. Filipino Forester 9 & 10:35-38. 1957 & 1958.

What of the Non-Accredited School Graduates?

SAF President George Garratt's letter to the New Jersey Civil Service Commission published in the August 1958 JOURNAL, expressing the opinion that no one other than a graduate of a Society-accredited school is eligible for professional employment in forestry, brings up the question: "What is to become of the graduates of the non-accredited schools and departments?" In the summary of statistics from schools of forestry for 1956, 11 non-accredited schools were listed which in that year graduated approximately 15 percent of all the general forestry graduates with bachelors' degrees. Some of these schools have offered a forestry curriculum for forty years.

As the graduate of a non-accredited school (The University of New Hampshire), and also of the Yale School of Forestry, and with some twenty years of practice and teaching in the profession, I feel that this is a question which must be faced. I don't believe that the standards of the profession should be lowered, but I do believe that it is possible for non-accredited schools to produce men of professional caliber able to compete on an equal basis with graduates of accredited schools. A study of the record will bear this out.

Accreditation by the Society should be striven for, but there are perfectly legitimate reasons why some schools have not attained it. These reasons may include, among others, the lack of a strong forest products industry in the state or the lack of interest on the part of top echelon administration in the institution. So long as they don't include lack of interest among the lower echelons of the administration and the teaching staff, the lack of accreditation may be much less serious than it would at first appear to be.

I have never believed in the closed shop philosophy for a profession, with the possible exception of medicine. In medicine, a first patient may be killed by ignorance or malpractice, but in most professions, including forestry, the new graduate is under supervision and usually under some form of apprenticeship or probation. No profession develops freely when opportunity is limited by arbitrary regulations rather than results. Provided that a graduate of an accredited and competent faculty and covering the prescribed subject matter of a general forestry program, he should be eligible for examination and/or appointment to civil service or private employment. Every appointee, federal or otherwise, should be on trial for a period of time whether he is a graduate of an accredited school of forestry or not. In either case, if the graduate cannot compete successfully on this basis, there should be no hesitation in terminating his employment. On the other hand, if the graduates of a non-accredited school compete successfully as they have done and are doing, there is no justifiable reason why they should not be employed.

In November 1957 an analysis of the occupations of graduates of one of the accredited schools of forestry was published in the JOURNAL. This indicated that 82 percent of the graduates whose occupations were known were in forestry and forestry related jobs. The University of Connecticut has a very small College of Agriculture, and although the forestry curriculum has been taught there for many years, the classes have been small, very seldom exceeding eight or ten men. The total number of graduates cannot be compared to that published or practically any of the other accredited schools, but a percentagewise comparison of the occupations of graduates of the Forestry and Wildlife Section of the University of Connecticut to the published figures is interesting. Of the 178 graduates whose occupations are known currently, 40 percent are in forestry, 13 percent in forestry related occupations, and 19 percent in wildlife management, for a total of 72 percent in the fields for which they prepared in the Institution. Twenty-eight percent are in non-related occupations. Doubtless, a study of the graduates of the other listed non-accredited institutions would show similar results.

"By their fruits ye shall know them."

EDGAR P. WYMAN
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Reviews

Landscapes of Alaska

Edited by Howel Williams. 148 pp. Illus. University of California Press, Berkeley. 1958. $5.

A dozen men who know the landscapes of Alaska do justice to that vast and scenic land in this beautiful volume which captures and vividly presents to the reader the grandeur of the mountains, volcanoes, glaciers, rivers, and fiords of this northern empire. Best of all *Landscapes of Alaska* enables one to understand these features and the landscapes of which they are a part.

Prepared by 12 members of the United States Geological Survey, and published in cooperation with the National Park Service, U. S. Department of the Interior, this introduction to the landscapes of Alaska and their geologic evolution is completely authoritative. Fifteen provinces are recognized and each is treated by a writer having extensive experience and specialized knowledge. An outstanding feature of the publication is the excellence of the illustrations, consisting of 23 handsome plates, 6 maps, and 3 figures.

Anything approaching full appreciation of the landscapes of Alaska, or those of any other region for that matter, requires an understanding of their evolution. The writers of the volume under consideration have provided, in clear and simple language, the basis for such understanding. The underlying rocks in each province are described, as also are the geologic processes by which the contemporary landscapes evolved. To quote one of the authors: "No page in history can be fully understood without knowledge of the pages that went before; neither can a landscape be properly interpreted without knowledge of its geologic background." With this book available, geological illiteracy among persons interested in Alaska will surely decline.

Although primarily concerned with the terrain and its geologic evolution, the writers have also included much information on mineral resources and mining. The reader likewise learns something of the history of exploration and modern development of the country.

This is without doubt the finest book on the scenic resources of Alaska ever produced. And these resources stand high among the cultural assets of the territory. Every person who is in any way interested in Alaska will find reading and rereading *Landscapes of Alaska* an exciting and rewarding experience.

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Yale University

The Physiology of Forest Trees

Edited by Kenneth V. Thimann, William B. Critchfield, and Martin H. Zimmermann. 678 pp. Illus. Ronald Press, New York. 1958. $12.

"Few plant physiologists use trees for experimental material, and few professional foresters study plant physiology." So begins the Preface to *The Physiology of Forest Trees.* Although Professor Thimann's statement is currently quite correct, it is hoped that the publication of this volume will mark the turning point whereby tree physiology will gain its due recognition both as a necessary adjunct to the practice of forestry and as a specialized branch of plant physiology.

The title of the book, *The Physiology of Forest Trees,* may be somewhat misleading. It is neither a textbook nor a comprehensive review of all that is known concerning tree physiology. Rather, it is a collection of 35 individual papers presented at the first International Symposium on Forest Tree Physiology which took place April 8 to 12, 1957, at the Harvard Forest.

The book is divided into nine parts, each representing a major phase of tree physiology. Coverage is surprisingly complete for a book of this nature, and the contributed papers are fairly well distributed among the various sections. The practicing forester, however, may be somewhat disappointed at finding only two papers each on mineral nutrition and forest tree seeds since these topics are currently demanding considerable time and attention. Also, a number of the papers are of a highly specialized nature. The general reader may, nevertheless, find the subjects exceptionally interesting from the standpoint of physiological problems currently being investigated and the experimental techniques employed.

As with most symposia, the majority of the individual papers are in the form of summaries or reviews of previous work with a modicum of new experimental data. This is not a criticism of the present volume, for such papers are of particular value to the average reader who has neither the time nor the facilities to keep abreast of the many specialized phases of forestry. Much of the literature on tree physiology is widely scattered throughout scores of journals and miscellaneous publications printed in many languages. It was the aim of the Symposium to consolidate this body of knowledge and to stimulate the search for more. The success of the former goal is eminently portrayed by the publication of *The Physiology of Forest Trees.* Success of the latter goal is too elusive to judge, but the thought-provoking comments and discussion following each paper indicate a lively interest in further research.

To the research worker and the practicing forester alike, this volume should serve as a valuable reference, if not a textbook, on tree physiology. The individual papers are well illustrated, necessary data

are concisely presented, and the texts are clearly and competently written by authorities widely recognized in their respective fields. Such a book deserves to be read by all foresters who are interested in the tree as a living, reproducible organism which is capable of reacting in rather discrete ways to changes in its environment.

PHILIP R. LARSON
Lake States
Forest Experiment Station

Polyporaceae of North America—the Genus Fomes

By Josiah L. Lowe. State University College of Forestry at Syracuse University. Tech Publ. No. 80. 97 pp. Illus. Syracuse, N. Y. 1957. $1.

This most recent treatment of the species of Fomes in North America is the result of Dr. Lowe's many years of research on the Polyporaceae. The genus is defined as including ". . . those pileate polypores that regularly persist for more than one season . . ." Sixty-eight species are accepted and described, none of which are new. Three new combinations are presented, including *Fomes viticola* (Schw.) Lowe for the species previously generally known as *Fomes tenuis* Karst. Six species, of tropical or subtropical distribution, are reported for the first time from North America.

The genus is divided into five sections. Dichotomous keys are provided to the sections and to the species within each section.

The descriptions are based on type specimens if these could be found, and are augmented by the variations found in additional material considered cospecific by the author. The author's treatment of species for which types could not be located conforms to the current concepts of these species in Europe and America. The descriptions are well organized and concise. The microscopic characters of each species are illustrated and photographs of the sporophores are presented for most of the species.

Following the description of each species, the geographical distribution, the type of rot produced (if known) and some indication of the hosts attacked are given. Very useful comparisons are also made between similar species.

Synonymy is apparently limited to basonyms, with the result that authorities and complete citations for many binomials in the genus Fomes are not presented [e. g. *F. juniperinus* (v. Schrenk) Sacc. & Sydow which is considered a synonym of *F. demidoffii* (Lév.) Cke., and *F. subroseus* (Weir) Overh. which is considered a synonym of *F. cajanderi* Karst.].

Considering the definition of the genus quoted above, the lack of any mention of *Fomes applanatus* (Pers. ex Wallr.) Gill., the artist's conk, or of related species is inexplicable.

The treatment as a whole is conservative and it is apparent that Professor Lowe has a broad species concept. That careful and thorough study even by conservative taxonomists must result in inevitable "name changing" is indicated by the fact that American material considered by earlier workers to be *Fomes geotropus* Cke. is referred to *F. ulmarius* (Sow. ex Fr.) Gill. Also, the Fomes on black locust, (Robinia) is considered distinct from *F. rimosus* (Berk.) Cke., and is called *F. robiniae* (Murr.) Sacc. and D. Sacc.

The publication will be of value not only to mycologists, but also to pathologists, foresters, and botanists in general, both professional and amateur.

C. GARDNER SHAW
Plant pathologist,
State College of Washington

The Travels of William Bartram

Edited by Francis Harper. 727 pp. Illus. Yale University Press, New Haven, Conn. 1958. $8.50.

William Bartram's record of his expeditions through Georgia, North Carolina, Florida, and Alabama has become a classic in the literature of the 18th century. Presenting a detailed account of the geography, vegetation, animal life, Indians, and extent of white settlement, it is a valuable reference on the early conditions of the Southeast. In addition, Bartram's vivid descriptions of nature have been an inspiration to other writers ever since. Although Bartram was an accomplished scientific observer, the scientific aspect of his work has been overshadowed by larger, more strictly scientific works published during that period. Bartram's generous mixing of enthusiastic description and discussion with his botanical and zoological observations was not enthusiastically received.

This new edition of Bartram's *Travels* is unique in that it is edited from a scientific rather than literary point of view. It brings together a wealth of information clarifying much of Bartram's scientific work without detracting from its literary value.

The actual *Travels*, including Bartram's illustrations, is reproduced completely, as originally published in 1791. The editor has contributed a brief, biographical introduction, a commentary, annotated index, lists of references and maps, a section on variations in orthography, punctuation and composition, a general index, and modern photographs of numerous landmarks, plants, and animals mentioned by Bartram.

The lengthy commentary corrects and explains chronology and nomenclature and gives a wealth of information accumulated through years of careful study of Bartram's work and the area in which he traveled. Mr. Harper followed nearly all of Bartram's trails through the Southeast, located plants and animals mentioned, and accumulated information on persons encountered by Bartram in Indian and white villages he visited. He points out the change that has taken place since Bartram's explorations, to-

gether with, in some places, the remarkable lack of change. This section of the book is lucid, interesting reading, delineating the personality and attitudes of William Bartram as well as documenting his work. The annotated index gives page references for all plants, animals, places, and major topics and corrects nomenclature where possible. This section, as well as the complete list of references and maps, should be very valuable to students of natural history of the Southeast. The photographs serve further to make the *Travels* come alive.

Because the book is divided up into these several sections, comprehension of the wealth of information presented on any one subject may be obtained only by referring back and forth from one section to another. The result is well worth the effort, however, and the book should be a useful reference for anyone attempting to acquire a complete knowledge of the vegetation, geography, and history of the Southeastern States.

ISABEL F. AHLGREN
Quetico-Superior Wilderness Research Center, Ely, Minnesota

Publications of Interest

Concentrated Spray Equipment by Samuel F. Potts, a book of 598 pages, was published recently by Dorland Books, Caldwell, New Jersey. The author, a former employee of the Division of Forest Insect Research, U. S. Forest Service, contributed greatly to the development of concentrated sprays and to the design and development of application equipment, during a career that extended over a period of more than 30 years. The book contains a wealth of useful information and is recommended reading for anyone interested in insect or weed control. The eight chapters cover terminology, fundamentals of application, ground spray equipment, aerial equipment, mixtures, control of weeds and woody plants, aerosols, and an appendix of some 75 pages. There are 162 illustrations. Copies of the book are available at $12.50 each.

* * *

A new Forest Service conservation film, *Conservation Vistas,* (16MM Color, Sound, 13 minutes) is specifically designed for teachers, teachers colleges, school administrators, and school boards. It is particularly applicable for educational conferences, workshops, institutes, classes of teachers and student teachers. The film presents classroom and outdoor activities that add interest to conservation teaching. Teachers are introduced to a wide variety of conservation experiences—from those found in their everyday environment to the more ambitious programs of school forests and school conservation camps.

Produced by the Forest Service, U. S. Department of Agriculture, Milwaukee, Wis., in cooperation with the Milwaukee schools. Released September 1958. Available from Regional Offices of the U. S. Forest Service and from the U. S. Forest Service, Washington 25, D. C.

Coming Events

Northern California Section

Members of the Northern California Section will meet December 6 in San Francisco.

Western Forestry Conference

In the Sheraton-Palace Hotel, San Francisco, Calif., the Western Forestry Conference will hold its 49th annual meeting December 10-12.

AAAS

The American Association for the Advancement of Science holds its annual meeting December 26-31, 1958, in Washington, D. C. (For program of interest to foresters see October JOURNAL, page 788.)

Northeastern Weed Control Conference

The thirteenth annual Northeastern Weed Control Conference will be held January 7, 8, and 9 at the Hotel New Yorker, New York City.

Inland Empire Section

On January 17 the Inland Empire Section will hold a meeting in Spokane, Wash.

Southeastern Section

The Southeastern Section has scheduled its winter meeting for January 22-23, at Montgomery, Ala.

New York Section

The annual winter meeting of the New York Section will be held January 29-30 at the Hotel Onondaga, Syracuse, N. Y.

Kentucky-Tennessee Section

A meeting of the Kentucky-Tennessee Section is scheduled for January 30-31 in Mamouth Cave, Ky.

Ozark Section

On February 20-21 Ozark Section members will meet at the Connor Hotel, Joplin, Mo.

Current Literature

Compiled by MARTHA MEELIG, *Librarian, State University College of Forestry at Syracuse University*

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Forest Insect & Disease Conditions in the Northeast—1957. By W. E. Waters and P. V. Mook. 31 pp. Northeastern Forest Expt. Sta., Upper Darby, Pa. 1958. Sta. Paper No. 107.

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Society Affairs

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Society Discusses, Transacts Business at 58th Annual Meeting

Salt Lake City, Utah, September 28-October 3

Report of the Council Meeting

A meeting of the Council was held September 28, 1958 in the Utah Hotel, Salt Lake City.

All members were present as follows: President George A. Garratt, Vice President Henry J. Malsberger, B. E. Allen, P. A. Briegleb, D. E. Clark, C. A. Connaughton, K. P. Davis, M. K. Goddard, W. D. Hagenstein, J. H. Stone, and H. J. Vaux; together with Henry Clepper, executive secretary.

Society Policy on Direct Mail Advertising

For many years the Society has derived income from addressing envelopes containing advertising matter for reputable business firms that are also advertisers in the JOURNAL OF FORESTRY. When members receive direct mail advertising matter in envelopes addressed in the Society's office, the procedure is in accordance with a policy long established by the Council. Income accruing to the Society is reported in the annual auditor's report under "Miscellaneous Income."

The envelopes are addressed at a cost to the advertisers of $15 per thousand. This service is not available under any circumstances to companies that are not JOURNAL advertisers. It is positively not available for political purposes. In all cases, the Society reserves the right to refuse the use of its membership list even by established advertisers if it is in the interest of the Society to do so. In short, no advertiser can obtain this service at any price if the executive office is not convinced that the firm is completely ethical and its products are of quality.

The practice of addressing envelopes for direct mail advertising is recognized in many scientific, professional, and technical societies as a perfectly legitimate, profit-producing activity. This service is one of several income-producing activities, together with JOURNAL advertising and sales of books, that helps obtain increased income in the face of mounting Society costs of operations.

On motion by Mr. Connaughton, seconded by Mr. Hagenstein, the Council voted unanimously that the foregoing policy be continued.

Forest Science Monographs

On motion by Mr. Connaughton, seconded by Mr. Briegleb, the Council voted unanimously to establish a new serial publication to be known as *Forest Science Monographs,* in accordance with the following policy.

The Society of American Foresters provides an outlet for research results and for the expression of professional and scientific thought through its publications JOURNAL OF FORESTRY and *Forest Science.* The JOURNAL, however, publishes relatively short papers only. *Forest Science,* although accepting somewhat longer papers, is unable to publish unusually long manuscripts even though of exceptional merit. *Forest Science Monographs* is intended to fulfill this need.

Papers of 32 printed pages or longer including tabular and graphic material (approximately 20,000 words or about 65 pages of double-spaced typescript) will

be considered for publication as *Forest Science Monographs*. The same editor and advisory board will govern acceptance of papers as for *Forest Science*. The monographs will be printed with covers. They will be mailed as supplements to regular issues of *Forest Science*, in accordance with U. S. postal regulations. Not more than one will be published each quarter. Titles will be listed in the table of contents of the appropriate issues of *Forest Science* and will be included in the annual index.

In undertaking this new publication to accomodate longer and more comprehensive articles, the Society must set up special financial arrangements. Each author (or his organization or sponsor) shall bear the entire cost of printing and mailing the monograph. The Society will contribute editorial services, however, as it does for its other publications. *Forest Science Monographs* will be sent to all subscribers of *Forest Science* without extra charge. A small supply of monographs will be stocked by the Society for sale. The author may, of course, order any number of additional copies. Charges for each monograph will be on a negotiated basis in view of rapidly changing costs.

It is the hope that through the publication of *Forest Science Monographs* an additional helpful service will be provided to members of the Society and to the profession of forestry.

Committee on Log Grading

In April 1958 President Garratt received the following letter from C. I. Miller of the Central States Section.

Dear Dean Garratt:

Under separate cover we are sending you a copy of the *Proceedings of the Hardwood Sawlog Grading Symposium* sponsored by our Section. We believe you will be particularly interested in the discussion starting on page 98.

We feel the proceedings show the need for co-ordination of activities and group action on a regional basis. We initiated action on the quality problem and believe it should be extended to cover the entire hardwood region. Our Section, however, is not in as favorable position to carry on the work as the national office. Consequently, we would appreciate it if you would discuss with the Council the possibility of appointing a log-grading committee. A committee of ten would seem appropriate with at least half of them from the eastern hardwood region. I am sure that A. M. Herrick, Charlie Walters, John Putnam, Charlie Lockard, Oliver Wallace, Bob Campbell and others would be glad to serve on such a committee.

Following discussion of the proposal, Mr. Hagenstein made a motion, seconded by Mr. Stone, that the Division of Forest Products be notified that a Committee on Log Grading has been recommended and that, since the matter is largely regional and might better be handled by the Sections, the proposal be referred to the Division officers with authority to take appropriate action. The motion was unanimously approved.

Council Statement on FAO

For a number of years the Society has had an official representative to the United States Interagency Committee on the Food and Agriculture Organization of the United Nations. Currently, the SAF representative is Henry Clepper.

In view of a proposed reorganization of FAO headquarters in Rome—a reorganization that would affect world forestry—the Council unanimously adopted the following policy statement on motion by Mr. Goddard, seconded by Mr. Stone.

The Council of the Society of American Foresters, representing 12,000 members, commends the Food and Agriculture Organization of the United Nations for its progress in extending the application of forestry throughout the world.

Although realizing the desirability of efficient organization for the implementation of FAO's operations, the Council of the Society believes it not to be in the best interest of forestry to subordinate the present Forestry Division under a Technical Department, as proposed by the Director-General. Such a Department, supervised by an Assistant Director-General, would result in forestry being reduced to a lower level in the FAO administration; and the Director of the Forestry Division would no longer enjoy direct administrative and policy access to the Director-General.

Moreover, the Council of the Society views the Director-General's proposal with apprehension because there is no assurance in the contemplated reorganization plan that the Director of the Forestry Division will be a professionally educated forester; that is, a person with technical training and a degree in forestry obtained from a college or university listed by FAO as offering forestry instruction of professional calibre. The rapid development of education and research in forestry throughout the world, together with the expanding importance of silviculture, forest grazing, watershed protection, and forest recreation as basic to forestry production and utilization, makes it essential that the Director of the Forestry Division shall be a trained forester, recognized by the profession as such.

Because the Society of American Foresters is broadly representative of the profession of forestry in America, the Council respectfully submits these comments to the Department of State, to the U.S. FAO Interagency Committee and to other agencies concerned with FAO's forestry program.

Canadian Forestry Institute

On a motion by Mr. Hagenstein, seconded by Mr. Goddard, the Council unanimously approved the following congratulatory message to the Canadian Institute of Forestry on the occasion of its golden jubilee meeting in Fredericton, New Brunswick, October 5-9, 1958. Mr. Clepper was authorized to transmit the greetings personally, as the official SAF representative to the CIF's fiftieth anniversary meeting.

To the Directors and Members of the Canadian Institute of Forestry, Greetings:

Noting that the year 1958 marks the semicentennial of the Canadian Institute of Forestry, the Council of the Society of American Foresters send felicitations to the Institute on the celebration of this notable anniversary at its meeting in Fredericton, New Brunswick, during the period October 5-9.

In addition, the Council warmly commends the Institute for its effective leadership in encouraging wider understanding of the problems of forestry and in improving forestry practice in Canada;

Congratulates the Institute on its success in advancing the science and practice of forestry among its members, and in cultivating a high sense of esprit de corps within the profession; and

Extends best wishes to the Institute for another fruitful half-century of second growth.

Proceedings versus Abstracts

The *Proceedings* as now published includes all technical papers presented at annual meetings. Such publication provides a complete record of technical sessions and thus serves a useful function.

On the other hand, some members have questioned the desirability of printing everything that is presented at an annual meeting. Many papers well received as talks do not necessarily qualify for publication. Perhaps half of the papers presented may not warrant formal publication.

A possibility would be not to publish a paper unless it passes the Editorial Board of the JOURNAL. An alternative would be to print a booklet of *Abstracts* of all papers before a meeting, and then select for subsequent publication in the JOURNAL those that are suitable.

Substituting *Abstracts* for the complete *Proceedings* should save considerable money. Assuming that each abstract is not over one page of typescript (about 250 words) a 32-page booklet would suffice. Such a booklet without cover might cost about 50 cents each to print. There would therefore be a saving in printing of about $3.75 per copy over the 1957 *Proceedings*.

In summary, the advantages and disadvantages of publishing all papers presented at annual meetings as *Ab-*

MEMBERS OF THE SAF COUNCIL who met at Salt Lake City, Utah on September 28 just prior to the 58th annual meeting of the Society. From left to right: standing—Henry J. Vaux, Philip A. Briegleb, J. Herbert Stone, B. E. Allen, William D. Hagenstein, and Maurice K. Goddard; seated—Kenneth P. Davis, Charles A. Connaughton, Vice President Henry J. Malsberger, President George A. Garratt, Executive Secretary Henry Clepper, and Donald E. Clark. All members were in attendance.

stracts are about as follows:

Advantages of Abstracts

1. Use of abstracts would keep out of the literature those papers not suitable for formal publication.

2. There would be a saving of about $3.75 each for the number of copies of the *Proceedings* that are printed. At present most of this cost is covered by the registration fee for the annual meetings.

3. By printing *Abstracts* there would be available to the JOURNAL a larger selection of papers including more in practical forest management which are in popular demand but are not normally submitted.

Disadvantages of Abstracts

1. *Abstracts* would not constitute a complete record of technical sessions at annual meetings.

2. By printing abstracts only, members who attend annual meetings would not get a tangible memento and reference book which they now receive.

3. There might be some criticism by authors whose papers do not qualify for publication in the JOURNAL.

4. An oversupply of papers for the JOURNAL might again build up.

In view of the foregoing considerations, Mr. Connaughton made a motion, seconded by Mr. Stone, that the executive secretary explore further the possibility of *[illegible]acts* instead of *Proc[illegible]* to report to the Council at [illegible]pril 1959 meeting. Unanimous[illegible]pproved.

Committee on Research

Dr. Vaux introduced the following resolution:

WHEREAS, the Council of Forestry School Executives recognizes that strong programs of forestry research at the schools are essential for the effective training of the research workers needed by all forestry research agencies, and

WHEREAS, the Council of Forestry School Executives has had a Research Committee functioning during the past year (1) to consider the ways in which an expanded program of research at forestry schools can be encouraged, whether by augmented funds from public and private sources or by other means; (2) to confer with the groups on other matters relevant to this subject; and (3) to report to the Council of Forestry School Executives its recommendations as to any actions which the Council might appropriately take to further the research function at such schools, and

WHEREAS, that Research Committee has made substantial progress in developing plans and support for strengthening federal financing of research at the forestry schools;

The Council of Forestry School Executives recommends that the Council, Society of American Foresters, appoint a Committee on Forestry Research to encourage implementation of the Council of Forestry School Executives Research Committee's plans by (1) reporting forestry school research needs periodically to the Experiment Station Committee on Organization and Policy, Association of Land Grant Colleges and State Universities; (2) testifying in support of relevant legislation; and (3) informing members of Congress as to the nature of the problem.

On a motion by Dr. Davis, seconded by Mr. Allen, the Council unanimously authorized the President to appoint a standing Committee on Forestry Research to review and study research needs of concern to the Society and to make recommendations to the Council. Noting the foregoing resolution by the Council of Forestry School Executives regarding research needs, the SAF Council requests early consideration of the matter by the Committee.

In addition, the SAF Council calls to the attention of the members the statement and action by the Council in support of forestry school research made at the Council's meeting on March 17, 1958 as reported in the May 1958 issue of the JOURNAL OF FORESTRY, page 365.

Finally, the Council requests that matters of policy going beyond existing Council action shall be brought by the Committee to the Council for implementation.

Committee on Ethics

The Constitution and Bylaws set forth procedure for the Council receiving charges of unprofessional conduct and provide for the investigation of alleged violation of the Code of Ethics. Because the proceedings may be somewhat unwieldy in certain circumstances, better methods might be helpful.

On a motion by Mr. Clark, seconded by Dr. Vaux, the Council voted unanimously to request the Committee on Ethics (Henry J. Malsberger, chairman) to propose a procedure for handling cases involving charges of unprofessional conduct.

Nominating Committee for 1959 Biennial Election

The Constitution provides that a Nominating Committee shall be appointed by the President not later than April 1 of the year in which an election is to be held.

The duties of this Committee are set forth in Article VIII, Section 1, which provides that there shall be at least two candidates for the office of President, and at least nine candidates for membership on the Council. The Committee is authorized to set the date of the election, which according to Bylaw 41 shall not be before December 1 or later than December 5.

On motion by Mr. Briegleb, second-

ed by Mr. Hagenstein, the Council voted unanimously to authorize the President to appoint a Nominating Committee for the 1959 election.

The personnel of the Committee will be announced later.

1963 Annual Meeting

An invitation to hold the 1963 SAF meeting in Boston was received from the New England Section. The proposed dates are September 22-25; or alternately, September 29-October 2.

On a motion by Mr. Allen, seconded by Mr. Connaughton, the Council unanimously authorized Mr. Clepper to explore the possibility for a meeting in Boston in 1963 during one of these two periods.

Advance meetings have already been scheduled as follows:

1959—November 15-18, San Francisco, Calif.

1960 — November 13-16, Washington, D.C. (Sixtieth anniversary meeting.)

1961 — October 8-11, Minneapolis, Minn. (Joint meeting with the Canadian Institute of Forestry.)

1962—October (specific dates to be announced later), Atlanta, Ga.

Institute of Wood Engineering

As a friendly gesture of good will toward the newly organized American Institute of Wood Engineering, Mr. Briegleb made a motion, seconded by Mr. Clark, authorizing President Garratt to send a letter of congratulation and cooperation to the Institute in behalf of the Society. The motion was unanimously approved.

Membership

Dr. Vaux, chairman of the Council Committee on Membership, criticized the generally incomplete or vague statements of endorsement frequently submitted by members in support of applicants for advancement in membership grade.

His report will be found elsewhere in this Society Affairs section.

Finances

Miss L. A. Warren, business manager, reported on Society finances. The auditor's report for the fiscal year (December 1, 1957-November 30, 1958) was not completed in time for this issue. A complete statement will be published in February.

Endowment Fund

At the Council meeting held in March 1958, the members voted "to authorize the President to appoint a committee of three to investigate the possibility of setting up a permanent endowment fund, and to report with their recommendations at the next Council meeting."

The Committee subsequently appointed consisted of Mr. Clark, Mr. Goddard, and President Garratt.

Reporting for the Committee, Mr. Goddard said the establishment of a permanent endowment fund would be highly desirable. He believes the reaction and support of the membership would be favorable. He further recommended that a SAF committee be set up to work on the project, and made a motion to that effect. Seconded by Mr. Briegleb, it was adopted unanimously.

Employee's Retirement Plan

Effective June 1, 1953 the Council unanimously approved a financial plan for Henry Clepper and L. A. Warren whereby until retirement each contributes monthly an amount of which a like amount is contributed by the Society. (A retirement plan is in force for other employees.)

On a motion by Dr. Davis, seconded by Mr. Hagenstein, the Council voted unanimously to continue the retirement plan with the contributions by the employees and the Society increased in view of shrinking dollar values.

In addition, on a motion by Mr. Briegleb, seconded by Mr. Davis, the Council unanimously authorized the appointment of a small committee to study the entire matter of the Society's retirement program. President Garratt designated Mr. Connaughton and Dr. Vaux to serve on this committee.

Next Council Meeting

On the invitation of Mr. Allen, and on a motion by Mr. Briegleb, seconded by Mr. Goddard, the Council voted unanimously to hold its next meeting at Palmetto Bluff which is on the coast of South Carolina near Savannah, Ga. The dates are April 7, 8 and 9, 1959.

The annual Society Affairs session which is reported upon below was held on the afternoon of September 29 in the auditorium of the Hotel Utah Motor Lodge, with President Garratt presiding. Division business sessions, reports of which then follow, were held at the time and place indicated in the individual reports.

Report of the President

George A. Garratt

At the start of this President's Report for 1958, I want to express my appreciation of the privilege of serving the Society during the 1958-1959 biennium. Since the first of the year, I have attended the meetings of nine Sections and conferred with officers and other members of these groups about Society matters. These contacts have impressed me with the dedication of the officers and committees to the welfare of their Sections and the Society as a whole; I wish to commend them most warmly on their accomplishments.

Were I to single out any one set of individuals in the Section organizations for special commendation, it would be the chairmen of the membership committees, who have been working so effectively in building up the Society. Noteworthy at all these

COMMITTEE chairmen and officers in final preparatory meeting for the 58th annual meeting of the SAF, September 28, 1958. Front row (*L* to *R*): A. R. Croft, George A. Garratt (SAF president), Floyd Iverson, Audrey Warren (SAF business manager), Reed Bailey, Henry Clepper (SAF executive secretary), J. A. Libby, and F. C. Koziol. Standing: George Craddock, Boyd Rasmussen, James Jacobs, Joel Frykman, J. Whitney Floyd, Farrest Rudd, Hall McClain, Paul Grossenbach, and Ray Moore.

SAF Vice President Henry J. Malsberger addresses group on field trip in Utah's Wasatch Mountains.

Section meetings were the high quality of the technical programs presented, the effective and often spirited participation of those in attendance, and the extent to which the younger members are interesting themselves in matters of both local and national concern. All these things demonstrate the increasing vitality of our organization at its roots.

Over the past nine months, the Council has had two fully attended meetings, one in the Washington office. I have also had the opportunity for several additional visits to the Society headquarters. Again and again I have been impressed with the loyalty and devotion of the headquarters group. The executive secretary, the business manager, the editor of the JOURNAL, and the other members of the staff are all doing an outstanding job to promote the welfare of our organization, despite financial and other handicaps. It is not easy to maintain an adequate working force in the face of the Washington competition for personnel.

As the executive secretary will indicate in his report, the Society's fiscal condition is satisfactory; we continue to operate in the black, and expect an increase in estimated net earnings for 1958 over 1957, despite a substantial increase in operating costs. This favorable financial situation reflects the outstanding ability of Miss Warren, who last May completed 30 years of service as business manager of the Society. Over these three decades she has seen the organization grow practically tenfold in size and financial position, from a membership of 1,350 (the approximate size of the present Southeastern Section) and a total annual income of less than $14,000, when, as Tom Gill expressed it, "nothing more impressive than a small folding checkbook was needed to take care of disbursements."

Increased membership over the past year has naturally resulted in added revenue from dues. The Society has also gained in advertising income, thanks to the effective work of Lloyd Thorpe, our advertising representative, and to a more limited degree through the sale of publications. The *Forestry Handbook* has proved a particularly fruitful publication from both professional and financial points of view.

The Society's financial picture includes one need that has been brought home to me repeatedly: we should have a substantial reserve to support important studies and other projects which the Society may wish to undertake from time to time. We have sometimes been fortunate in getting needed funds from foundation sources to finance studies such as those on research and education in forestry, but other worthwhile projects have been repeatedly deferred or abandoned for lack of funds. The president has appointed a council committee to study the feasibility of a substantial endowment fund, to yield an assured annual income for support of Society projects.

In regard to membership, it is heartening to note the continued growth of the Society. By the end of the calendar year we may well approach the goal of 12,500 we had set for 1958. As an educator, I have been especially pleased with the activities of our forestry school faculties in stimulating an interest in student membership. One school has reported 100 percent enrollment of eligible students for the second successive year. A marked increase in the numbers advancing to the grade of Member has raised the total classification above the number of Junior Members for the first time in the recent history of the Society. A special word of appreciation should go to the Council Committee on Membership, which has processed more than 300 individual applications with dispatch during the year.

Now, gratifying as the steady increase in our ranks may appear, analysis of our actual membership potential leaves us no cause for complacency. There is still an astonishingly large number of eligible men, actively engaged in forestry pursuits, who are not now, and in many cases never have been, members of the Society. These professionally qualified non-members offers a particular challenge to the appropriate Section and Chapter committees and to all of us who may be in a position to promote their interest in the Society.

From time to time, at Section meetings and elsewhere, I have heard criticisms of the JOURNAL OF FORESTRY, especially in regard to its subject coverage and, in particular, to the dearth of articles dealing with "industrial forestry" and "practical, down-to-earth subjects of direct use to men in the field." I am sure that the editor can speak effectively on his own behalf in this regard, but I must note both the obvious difficulty of meeting the over-all desires of our extraordinarily diversified membership, and the fact that the coverage of the JOURNAL is largely what the members make it through their own contributions. The most direct way to plug any gaps in subject matter is for the members themselves to submit pertinent articles and notes. I know that the editor and associate editors would welcome such contributions.

In connection with the JOURNAL, I commend the editors on their current plan to devote occasional issues primarily to symposium-type treatment of selected subjects of rather broad interest. The first such discussion, devoted to wood utilization, appeared in the August number. Similar treatments of other subjects are planned for forthcoming issues. The editors invite suggestions regarding subjects which might be covered in this manner.

The editors of *Forest Science* also deserve high commendation, as this quarterly completes its fourth year of publication, with a subscription list of approximately 1,200. This journal has gained for the Society distinct professional benefits in providing an internationally recognized outlet for the publication of research papers which have a more restricted reading audience than do articles in the JOURNAL OF FORESTRY. Significantly a large percentage of the subscriptions to this quarterly are from foreign sources.

During the year, the Society initiated a major new project, a nationwide study of Education in Forestry and Related Fields of Natural Resources Management, made possible by a grant from the Old Dominion Foundation, Inc., of New York. The study is being conducted under the direction of Harold G. Wilm, associate dean of the State University College of Forestry at Syracuse University, who will report on it later in this ses-

sion. The study—the first comprehensive survey of forestry education since publication of the Graves and Guise report in 1932—has become necessary in the light of the notable changes in professional needs, opportunities, and attitudes since World War II. The results, which are scheduled for publication by the Society in 1960, are expected to set the goals for the future development of professional and technical education in forestry and related areas.

At the outset of my term of office, I initiated a minor innovation of sorts, in converting the somewhat time-honored President's Column, published monthly in the JOURNAL OF FORESTRY, to the Council's Column. This was particularly intended to relieve the president of the responsibility of preparing such a monthly statement to the membership, but much more to provide the members of the Council with the opportunity to speak their minds on matters they might wish to present. I can vouch for the benefits of the first objective, and my reading of the contributions of the Council members and the comments thereon which have reached me clearly indicate the stimulation of ideas that has resulted from the change. It is planned to carry this same program forward in 1959.

A notable forthcoming event, of interest to the members of this Society, is the Semi-centennial Celebration of the Canadian Institute of Forestry, to be held in Fredericton, New Brunswick on October 5-9. I take this opportunity to congratulate our sister professional organization "across the border" on the outstanding role it has had in the development of the practice and profession of forestry in Canada over the past 50 years. We wish it continued success in the decades ahead. We are looking forward with special interest to the joint meeting of our two organizations in Minneapolis in 1961, and to the opportunity that meeting will present to return the many courtesies extended to our members by our Canadian friends at the 1952 meeting in Montreal. Recognition of the forthcoming 50th Anniversary was made by the Council which passed an appropriate resolution at its meeting yesterday.

Reference to the Semi-centennial of of the Canadian Institute of Forestry brings to mind our own 60th Anniversary Celebration, to be held in Washington, D.C. on November 13-16, 1960. Plans are already going forward for this meeting, including the preparation of a commemorative volume *American Forestry: The First Sixty Years*. In the meantime, I would direct your attention to our next annual meeting and express the hope that we will see you all in San Francisco on November 15-18, 1959.

Report of the Executive Secretary

Henry Clepper

According to the Constitution of the Society, the executive secretary shall perform the duties of treasurer. A brief financial report is consequently in order.

Income for the fiscal year 1958, which ends November 30, is estimated at approximately $170,000. Membership dues still provide the single largest item of revenue and for this year dues are estimated to bring in $113,000.

In addition to the above regular income, the Society received a grant of $39,500 to support a study of education in forestry and related fields of natural resources management. A special report on this study, currently in progress, will be made later.

Expenses during the year are expected to total $158,000. Hence, the Society should end the year with a net profit of $12,000.

As is customary, a complete statement of income and expenses for both 1957 and 1958 will be published in the JOURNAL following the audit of our books at the end of the fiscal year.

Membership

A report on membership will be presented by the chairman of the Council Committee on Membership. I shall simply put into the record that currently our total number of members in all grades, is approximately 12,000, an increase of nearly 500 over the period one year ago.

In behalf of the executive office, I want to express appreciation to the loyal and devoted service rendered the Society by the Section and Chapter membership committees, and particularly by the Section membership representatives at our schools of forestry.

A New Project for 1959

Our Society now publishes two periodical magazines: the monthly JOURNAL OF FORESTRY which now goes to more than 13,000 members and subscribers and *Forest Science*, a quarterly with 1,200 subscribers. In accordance with the Constitution, the Society may issue such other publications as the Council may authorize.

The JOURNAL publishes relatively short papers only. *Forest Science*, although it accepts longer papers than the JOURNAL, is unable to publish unusually long articles even though they are of exceptional merit. A new publication has been proposed to fill this need.

Under authority of the Council, the Society will start a new series in 1959 to be known as *Forest Science Monographs*.

The same editor and advisory board that passes on papers for *Forest Science* will review papers for the *Monographs*. These will be printed with covers and mailed as supplements to regular issues of *Forest Science*. Not more than one will be published each quarter. Titles will be listed in the table of contents of *Forest Science* and will be included in its annual index.

Each author or his sponsor will be expected to bear the entire cost of printing and mailing the *Monograph*. The Society contribution will be limited to editorial services and distribution.

FOUR hundred SAF members on field trip at 58th annual meeting watch demonstrations of aerial equipment in forest fire suppression.

All subscribers to *Forest Science* will receive the *Monographs* without extra charge. A small supply will be stocked by the executive office for sale.

It is the Council's hope that through the publication of this monograph series the Society may provide an additional useful service to the members and to the profession at large.

Report of the Editor

The primary responsibilities of an editor—other than being the man to whom irate readers may write — are those of a middle man, an expediter, a coordinator. The publications which are shaped into their final form by the efforts of our editorial staff represent the work, contributed without pay, of many people. Over 200 names, for instance, appear under the titles of articles and notes in a year's volume of the JOURNAL. The identity of 11 associate editors may be found on the JOURNAL masthead. The report of the paid editor, then, becomes a report of what the Society accomplished, what problems it faced, in this particular field of its activity.

During the year just passed the third edition of *Forestry Terminology* was released, 12 issues of the JOURNAL, including one special one, were published, and a proceedings of the 1957 meeting issued. Work got well underway for the appearance in 1960 of a book commemorating the 60th anniversary of the Society. It will be written by 22 different authors. Thirty-seven editorial committee members went over the *Forestry Handbook* to make suggestions for an overall revision. The staff is reviewing these reports and passing them on for the final judgement of the publisher as to when a revised edition may be issued. It seems doubtful we can expect one until 1960 or after.

Of these undertakings, funnelled into and through the editorial office, the most important is the JOURNAL OF FORESTRY.

We have in mind the desirability of this year taking some type of readership survey to determine membership evaluation of the JOURNAL.

Such a survey was made five years ago. In essence, readers who replied (4,500 out of 9,000) were satisfied with the general balance of departments. They emphatically showed an interest preference first for articles, second for news, and third for notes. Half of them expressed the opinion that the contents of the articles section should be "less technical." Half thought it should not. Without going into that question any more deeply I think it can be concluded that many readers of the JOURNAL would welcome more articles dealing with subjects of general, profession-wide interest and more dealing with the "practice" of forestry as contrasted with its sciences. Many have expressed a desire to see more discussion, pro and con, of policy issues.

I do not propose here to express any opinions as to what the article department of the JOURNAL should be except that it should and doubtless eventually will be what the majority of the membership wants. All of us concerned with its publication readily assert that the JOURNAL can be improved. I would, however, point out that the present character of the JOURNAL is basically determined by two factors: (1) the policies laid down by Council action and by years of tradition and (2) by what the JOURNAL receives to print. The more restrictive of these two general factors is the latter. Until the variety and scope of submissions to the JOURNAL are considerably increased there is plenty of latitude within present policies and aims.

During the period October 1957 through September 1958 we carried 98 full length articles, 56 notes, and 13 points of view in addition to the usual proportions of other departments. During the same period we received 135 articles (an increase of 19 over the previous year), 58 notes (about the same as before) and 11 points of view. About 15 percent of the articles were solicited.

Of the articles and notes submitted, rejections amounted to 7 percent, exactly the same as the previous year. Rejections of points of view was even lower, for that is the department in which readers express views, opinions, or disagreement.

No article submittted to the JOURNAL that says anything the editorial board judges worth saying is ever rejected because of poor writing or improper form. The author is aided in overcoming any such deficiencies by the associate editors and the staff.

We succeed to some extent in moulding the contents of the articles section by solicitation, but the total content is largely determined by what is submitted.

To reach any considered opinion about the articles in the JOURNAL it is necessary to evaluate their subject matter over a reasonable period of time. I undertook to do this for the past year. For the purposes of this report I touch only on highlights. Two encouraging facts showed up. First, there was an increase in the number of articles one might classify as of general interest. Second, I found that it was most difficult to classify articles in specific subject matter fields because in individual articles entomology and silviculture blended together, wildlife and soils. Practically all articles had some aspects of forest management involved. We are at least touching on most branches of forestry and we are recognizing the interrelationship of all branches.

However, an atiempt to classify by primary subject matter indicates that the balance of articles is off. No one would venture to suggest that silviculture, pathology and entomology, and genetics and artificial regeneration are not extremely important subjects, but when they total almost half of all articles it seems obvious that other fields are being neglected by our contributors. The percentage of articles in the other eight fields delimited by the specializations of the associate editors varied from one to seven. The one percent article was in the field of recreation, widely recognized as a currently important one. It is apparent that the JOURNAL needs greater coverage in a number of the major subjects it is supposed to cover.

In considering this matter of subjects it is logical also to look at the background and affiliations of authors. One hundred forty authors or co-authors contributed. Their backgrounds were as follows: 51 percent were affiliated with a research agency, primarily federal. The teaching profession accounted for 29 percent. Of the rest, 7 percent were unclassified as to affiliation; 6 percent were in private or industrial work; 4 percent were from government agencies other than the Forest Service or research agencies; 3 percent were state employed (other than research). For the particular period in question no U. S. Forest Service employee in the administrative branch authored an article for the JOURNAL, though they did write some notes and reviews.

Five years ago we made a somewhat similar tabulation. The number of authors from research agencies has in-

creased. The number from private industry has made some increase. The teaching profession has about held its own. The increases were balanced by a decrease in the number of authors from federal government service other than research.

For this decrease I cannot readily account except that five years ago JOURNAL articles included annual meeting papers resulting in more diversity of authorship. The increase in contributions from men in research can be attributed to an overall expansion in research programs and the fruition of programs begun some years ago.

Again it can be said that the balance is off. JOURNAL authors do not represent a cross section of professional work. It would be unrealistic to demand that they should—completely—but we do need more authors from the ranks who do not now write. When I say this I would make it clear that what the JOURNAL needs is not *less* backing from men in research, but *more* backing from others. The knowledge gained from research is basic to the practice of forestry and therefore essential to the purposes of the JOURNAL.

As to the other two departments in which readers express greatest interest—that is, forestry news and notes, or short articles—comment can be brief.

We need a great many more items of the notes category, and the range of subject matter is wide open.

We need more help in getting current news items, for we have no staff of reporters stationed in strategic locations.

Finally, a quick look at some current plans underway. The November issue of the JOURNAL will be devoted to a report on progress in forest tree improvement and genetics.

A volunteer group of authors is now in the process of compiling, for the April issue, special articles on the subject of forest insect research and control. We hope thereby to contribute something worthwhile to the present public discussion about the use of insecticides.

In the planning stage is a symposium or special issue on the effect of herbicides on environmental factors.

It is our aim by these special issues, and by a limited number of future special issues and symposiums, to bring reliable technical information to the profession on matters of current interest.

ARTHUR B. MEYER

THE COMMITTEE FOR the Study of Education in Forestry and Related Fields of Natural Resources Management. L. to R., E. F. Heacox substituting for B. L. Orell, George A. Garratt, Chairman Henry J. Vaux, Harold G. Wilm, director of the study, Richard E. McArdle, Henry Clepper, and Evert W. Johnson, assistant director.

Report on the Study of Education in Forestry and Related Fields

Early last spring, at the request of the Society of American Foresters, the Old Dominion Foundation granted funds to support a nation-wide study of education in forestry and related fields of natural resource management. The particular purpose of this study is to appraise the present status of education in this broad field, and to evaluate needs in forestry education in coming years.

The scope of this study includes what is conventionally known as "general forestry," plus the related fields of range, wildlife, recreation, and watershed management, as well as the primary utilization of wood products. The study will not deal with majors in wood physics and engineering, pulp and paper technology, or chemistry. The study is scheduled to occupy two years, starting June 1958.

Organization

Giving general supervision to the study is an Advisory Committee composed of Henry Vaux, chairman, and R. E. McArdle, Bernard Orell, Hardy Shirley, and Henry Clepper; George Garratt as president of the Society of American Foresters is a member *ex officio*. Under their general direction, I am functioning as a part-time director, ably supported by Evert Johnson of Alabama Polytechnic Institute, as assistant director. In addition, the project is to have counsel by Samuel T. Dana and analytic work by the Syracuse University Computing Center. Headquarters are established at the State University College of Forestry at Syracuse.

Up to this time the organization has been functioning only on a fractional basis. Dr. Johnson has up to now been able to spend only two full weeks on preliminary aspects of the task, and begins full-time duty on October 1.

In the meantime, however, we have accomplished a number of preliminary steps. The director has visited personally with a number of leaders in forestry and related fields, and got their ideas on how the study should be organized. These visits, plus counsel with Dr. Kaufert and Dean Dana, and some concentrated work by Dr. Johnson and myself, have led to development of a formal procedure for the study.

Briefly, the procedure includes the following steps: written inquiries by letters and questionnaires; field visits to the schools of forestry and professional people; analysis of the written inquiries and visits, and rough-drafting of a report on the results; review of the rough draft; and preparation of the final manuscript.

The letters of inquiries and questionnaires to professional people and college faculties have been prepared in preliminary form, reviewed by the Advisory Committee and a number of individual foresters, and revised. In final form, they are now ready to be distributed.

Soon after the middle of October, Dr. Johnson and I shall start a series of field visits to southern, eastern, and western schools which will last approximately two months. Visits to northeastern and Lake States schools will be made later in the winter. In

the meantime, responses to our letters and questionnaires will be received by our secretary and processed through the Syracuse University Computing Center.

It is interesting to anticipate the results of these inquiries, visits, and analysis. Even in the beginning of this study, the feeling grows upon us that the forestry profession may be going through a transition in stature. During the past decades, professional and educational emphasis has tended to be primarily on the applied aspects of the profession. The young forester has been expected, for example, to handle himself efficiently in both professional and practical ways as soon as he leaves school. This emphasis on the practical has necessarily restricted the scientific aspects of undergraduate training in professional forestry. In very recent years, however, there has been expressed a growing concern that our men be educated more deeply in the scientific aspects of forestry. What is this going to mean? More training by employers on the job, in the practical aspects of forestry? Longer periods of formal education for more foresters? Or, perhaps different types of education for men who are going to become forest managers and administrators, as contrasted to those who will focus on the technical and scientific aspects of forestry?

H. G. WILM, *Director*

Report of the Editor of Forest Science

I have been asked to make this report since most of the year is included in the period September 1, 1957 to September 1, 1958 when I served as acting editor during Stephen Spurr's absence.

Forest Science has nearly completed its fourth year of publication. It has become well established as the principal medium for publication of the more technical material in the broad area of forest science. It is certainly one important means of enhancing the professional stature of forestry. The Society can take just pride in the national and international recognition it is receiving for support of this publication venture.

Circulation has about held constant: 1,170 in 1957 and 1,195 in 1958, the latter distributed as follows:

U. S. and possessions	856
Canada	92
Other foreign	247
Total	1,195

Active efforts were made by F. H. Eyre during the year to strengthen circulation and awareness of the journal. These include individual letters to a number of agencies that might subscribe to more than one copy, an exchange advertisement arrangement with *Forestry Abstracts*, the abstracting of *Forest Science* articles in *Biological Abstracts*, short notices of *Forest Science* articles in the JOURNAL OF FORESTRY, and a notice sent with the annual mailing of Society dues calling attention to *Forest Science*.

Financially, the journal continues to stay in the black. It is financed by paid annual subscriptions and subsidized by the Society through part-time help from Mr. Eyre who processes manuscripts for publication when they have been reviewed and accepted by the editor, and handles production of the issues. Working arrangements between the editor, Mr. Eyre, and the Society office are excellent.

During 1958, a total of 368 pages will be published in the four quarterly issues. The breakdown by technical papers (not counting reviews, etc) for Volume 4, including an estimate for the December issue, is of interest and is shown below.

Subject group	No. of papers	Pages
Silvics-silviculture	5	48
Tree improvement	6	44
Physiology and morphology	12	105
Pathology	5	41
Entomology	5	61
Measurements-statistics	1	7
Forest economics-management	0	0
Range-wildlife	0	0
Soils	3	29
Forest products	0	0
Forest influences	2	23
Total	39	358

Some concentrations and gaps are apparent but like all journals, *Forest Science* cannot print what it does not get. The large amount of material published in tree improvement, physiology and morphology, entomology and pathology reflects the large current research emphasis on this work. Some care needs to be exercised lest *Forest Science* become too much identified as a plant science publication. More coverage is needed in economics-management, measurements, forest products, and range-wildlife to maintain a desirable balance. More reviews, especially of foreign books, are needed.

By action of the Council, the Board of Editors has been placed on a 3-year staggered basis (except for Henry Clepper *ex officio*). The same arrangement has been established for Advisory Board members. These arrangements are being worked out for 1959 effectuation and will place *Forest Science* on a sound continuing basis. It is believed desirable to enlarge the Advisory Board to 12 members to give better strength, representation, and subject matter coverage in review.

During the period I have served as acting editor in Professor Spurr's absence, September 1, 1957 to September 1, 1958, 73 manuscripts were received and over 80 handled. This supply has maintained a manuscript backlog of nearly two issues ahead which is about right. The number of manuscripts submitted has been steadily increasing over the four years of *Forest Science*. This volume has permitted reasonable discrimination in selection and the aim has been to obtain thorough review. The Advisory Board has responded fully to this need. If there seems any real question about a manuscript it receives two and often three independent reviews.

From the beginning, a need has been felt for means of publishing occasional papers longer than can be handled directly in *Forest Science*. Recommendations have been made to the Council to meet this need.

Since I have completed my term, I should like to discuss the editorial job directly. Its size is inevitably increasing. It is a substantial job to handle more than 80 manuscripts in a year. Several hundred thousand dollars of research effort are represented in them. The Advisory Board naturally carries the brunt of the technical review job. But the editor must select the reviewers, decide how much is needed, adjudicate reviews when necessary, and deal directly with the author in acceptance, request for review consideration, or rejection. The clientele of authors and readers of *Forest Science* goes considerably beyond Society memberships and direct forestry interests. Scientific areas are becoming rather highly specialized and adequate review cannot be neatly compartmented and directly made by a small board. A standardized review procedure does not seem practicable for a technical journal of this nature.

Strong leadership is necessary for

the continued technical prosperity of *Forest Science*. More weight can be placed on the Advisory Board and continued effort should be made to ease the editor's job. Nonetheless, the editor inescapably must assume final responsibilities in the vital area of manuscript acceptance. It is here that the technical stature of the journal is gained or lost. Discharge of these responsibilities requires a man of large stature and competence, able to deal with scientific people as a respected peer. For this reason, it is believed that the editorship should continue to be filled by a well-established technical man in active work.

Maintaining such a policy is not easy. The requisite editor cannot be paid what he is worth; in major degree such a job will have to be assumed as a labor of love and professional service by both the editor and his supporting organization. Considerable time is required; the job is more than just an evening off-hours assignment. There are not many qualified men who have the time and organization support to assume the job. Also, a substantial secretarial burden has to be met, as the secretarial staff in the University of Michigan School of Natural Resources well knows. Yet even if money were available, it is hard to handle this work on a strictly paid basis.

Establishment of a definite three-year term of office by the Council is a wise move. No one can or should assume the job indefinitely. Establishment of some stipend for the editor and at least partial provision for secretarial support is suggested for consideration. The problem of succession will soon be upon us.

Finally, the Board of Editors and Advisory Board will appreciate receiving comment on the character and quality of articles published and how *Forest Science* can be improved. We do not hear enough from our customers.

KENNETH P. DAVIS
Acting editor

Report of the Council Committee on Membership

Society membership continues to grow in gratifying fashion. As of September 1 we had 11,986 members — a number 25 percent greater than the membership just five years ago. During the past 12 months there has been a net increase of 456.

The increase in numbers has been spread pretty well across the eight grades which constitute our membership structure, except for the grades of Junior and Associate. Junior members declined during the year by 8 percent. This can be accounted for by the fact that many Junior members continue to apply voluntarily for regular advancement to Member grade. As a result the average period spent as a Junior member is declining and advancements out of grade exceed the number of new Junior members coming in. Any concern over the decline in numbers of Junior members should be thoroughly dispelled by the fact that the number of Student Members increased during the year by 43 percent—the largest relative and absolute increase recorded in any grade.

The Society office handled close to 2,500 membership cases last year, including admissions, advancements, and reinstatements. Preparation of these cases for submission involved substantial effort on the part of Section membership chairmen. All of us owe a vote of thanks to these membership chairmen and to the Washington office for the energy they have devoted to membership matters.

Although the overall trend of membership is good, the Council Committee on Membership wishes to draw attention to certain current problems. The matter of membership grades has been under discussion over the last two years. At the Syracuse meeting in 1957 Section delegates gave strong support to the view that the distinction between the present Junior and Member grades should be strengthened. At that time the Council Committee asked that it be given answers to five specific questions on membership matters after the questions had been discussed by the Sections. To date, only two Sections have responded to this request. The Committee has therefore concluded that the present system of grades is generally satisfactory to the members at large and that no further action on this matter need be taken at this time.

MEMBERSHIP IN SOCIETY OF AMERICAN FORESTERS, AS OF AUGUST 31

Grade	*1957*	*1958*
Fellows	75	88
Member	5,408	5,768
Junior	4,050	3,726
Student	851	1,215
Affiliate	778	804
Associate	250	236
Honorary	20	20
Corresponding	98	129
	11,530	11,986

The Committee feels considerable concern over the procedures currently in effect for advancement to certain grades. In all cases of advancement from Affiliate to Junior member and of regular advancement from Junior member to Member present procedures require endorsements by three voting members. Presumably this procedure recognizes that the best evidence as to a man's qualifications for advancement is that provided by his professional colleagues. The Committee subscribes to this principal but believes that too often the use of endorsements does not in fact apply the principal effectively. Many members spend much time and effort in providing careful and painstaking endorsements. To these members the Committee is duly grateful. Unfortunately, however, their good work is undermined by others who, for one reason or another, submit statements of endorsement which bear no relation to the actual qualifications for advancement which the Society has set up. The Council Membership Committee then has an unenviable choice between either advancing a man whose qualifications for advancement have not been made clear or of turning down the man because of the inadequacies of his colleagues who provided endorsements. If it decides on the latter alternative, it does so with the certain knowledge that extended correspondence will ensue with one or more persons disgruntled by the action.

This situation is unsatisfactory to all concerned. It is also dangerous. Throughout the Society there is a recognized desire to strengthen professional standards and professional stature by every feasible means. The effective administration of the Society's admission and advancement rules are obviously a key factor in determining the nature of these professional standards.

Decisions on admission and advancement rest with the Council. But those decisions must be made on the basis of information and recommendations provided by the members at large. It is therefore essential that information supplied both by Section membership committees and by individual members who provide endorsement statements be objective. They must also be writ-

ten with a clear understanding of what the Society's standards are. This is of particular importance in connection with doubtful or marginal cases, because our standards are actually determined by the least qualified man whom we admit to each of the several grades.

Accordingly, if you are one of the one thousand members who prepares an endorsement statement each year may I urge three things upon you. First, recognize that you are being asked to provide information and judgments vital to the standards of our Society. You are not simply doing a favor for a friend. Second, familiarize yourself with what the Society members have established as the criteria for membership grades. These are given in the June 1958 JOURNAL OF FORESTRY. Third, write your endorsement so that is gives specific information that is relevant to the standards the Society is trying to apply.

During the next year the Council Membership Committee and the Washington office expect to devote renewed efforts to making our membership procedures more efficient and more effective in maintaining the standards which have been established. We solicit your continued fine cooperation in what we believe to be a vital process in maintaining the professional posture of our Society. Any recommendations or suggestions will be warmly welcomed by your Council committee.

B. E. ALLEN
W. D. HAGENSTEIN
H. J. VAUX, *Chairman*

Report of Committee on International Relations

This Committee has been working on several important international matters of interest to members of the Society. Two of them, the Fifth World Forestry Congress and the International Union of Forest Research Organizations, are reported on at this time.

The Fifth World Forestry Congress will be held at Seattle, Wash., in September 1960. This will be the first World Forestry Congress to be held in the Western Hemisphere; the first three were in Europe, the fourth in the Far East.

Two years ago, at our annual meeting in Memphis, the Society of American Foresters Council endorsed the idea that the United States be host to the Congress. Previously the Western Forestry and Conservation Association had advanced the idea, and subsequently several other organizations gave their endorsements.

Soon after the Annual Society of American Foresters meeting in Memphis our government formally tendered its offer to other governments to be host to the World Forestry Congress in 1960. The offer was made through the Food and Agriculture Organization of the United Nations. It was promptly accepted. Then followed an invitation from the University of Washington at Seattle to the United States State Department to hold the Congress on its campus in 1960 during the first part of September. The invitation was accepted. Thus in the space of some nine months from the date of our Memphis SAF Annual Meeting two years ago both the time and place of the next World Forestry Congress had been decided. All things considered, this was remarkable progress. To say that bringing an international meeting to the United States is a simple matter would be a gross understatement. You should know that it involved a great deal of work for a great many people.

During the subsequent year and three months, that is up to the present time, additional progress has been made in planning for the World Forestry Congress. Last November, McArdle, Clepper and I met in Rome with forestry representatives from 35 countries who were attending the regular FAO Biennial Conference. Sponsored by the Forestry Division of FAO, much discussion centered on the kind of program for the World Forestry Congress desired by the various countries.

Following our meeting in Rome the U. S. State Department set up a temporary Working Party to formulate tentative plans and operating procedures for the Congress. The Working Party was composed of representatives of the various forestry agencies, public and private, located for the most part in the Washington, D. C. area. I. T. Haig served as secretary and I served as chairman. Much work was done by this Society's executive secretary, Henry Clepper, as well as by other members of the Working Party. Our work entailed two principal jobs—one was to recommend to the U. S. Departments of Agriculture and State the size and composition of an Organizing Committee for the Congress. The other was to develop detailed suggestions on the scope and kind of program for the Congress, the suggestions to be given the Organizing Committee to expedite its work once it has been appointed.

Our Working Party has completed its work. We have recommended that an Organizing Committee for the World Forestry Congress be composed of about 40 members drawn from the various forestry interests and geographic areas of the United States. A list of candidates has been developed from which the Secretary of State may make appointments. It is expected that an Organizing Committee for the Congress will be appointed during the next few weeks with the first meeting to occur in December. We have also developed detailed suggestions for the program and field tours of the Congress. We visualize that the registration for the meeting will take place in Seattle about Labor Day, 1960, and that the meeting will run for about 10 days, including two or three local field tours sandwiched in between sessions. The Congress will probably be divided into subject-matter sections with some over-all topics scheduled for general sessions. Simultaneous interpretation for the three languages of English, French, and Spanish will have to be provided. Prior to the meeting in Seattle, a choice of field tours to the various sections of the United States is being suggested. After the meeting in Seattle, field tours to Canada may be arranged.

For further details about the World Forestry Congress consult your forthcoming monthly JOURNAL OF FORESTRY.

The other international matter about which a few comments are deemed of interest at this time to Society members concerns the International Union of Forestry Research Organizations (IUFRO). There is a growing participation in the work of IUFRO among forestry schools and other forestry research organizations in the United States. I have recently attended a meeting of the Permanent Committee of IUFRO in Brussels, Belgium, where progress and plans for the Union were

discussed during a week-long meeting. The Union has underway a number of worthwhile international projects, one of which the Society is actively cooperating on. This project deals with a world-wide compilation of technical terms used in forestry. I was told that our SAF *Terminology* was one of the best and most complete compilations of any country's. The Union plans to publish the world terminology in four languages—English, German, French, and Spanish.

The Union has been encouraged by the increased interest and participation on the part of the United States and other country representatives to try to extend its coverage both geographically and subject-matter-wise. Its current policies are freshly oriented toward becoming more completely world-wide in its membership and toward including in its program of work a wider range of forestry research fields. IUFRO hopes several more countries in Latin America, the Far East and the Near East will join in its work. New subject matter being emphasized in its international work are watershed management projects under section leadership of Professor Wilm of the New York State College of Forestry and forest disease projects under working party leadership of Dr. Hansbrough of the Forest Service.

This trend toward broader subject-matter coverage and wider world membership in IUFRO has been actively urged by several of us during the last few years. We hope the Union is now on its way to success in its broadened objectives.

V. L. HARPER
Chairman

Report of the Committee for Advancement of Forestry Education

As part of a regional review conducted by the Northwest Association of Secondary and Higher Schools, a visiting committee composed of Harold G. Wilm and Henry Clepper reviewed the College of Forest, Range and Wildlife Management at Utah State University.

The visiting committee reported favorably to the Council of the Society. On the basis of their recommendation, the Council voted to reaffirm and continue the accredited status of the University for professional forestry instruction. As stated in Mr. Clepper's letter of August 5th to the President of the University, "Thus the College of Forest, Range and Wildlife Management can be considered as accredited as regards the forest management curriculum, but not as regards the range management and wildlife management curriculums. These latter are excellent curriculums, as our report shows, but there exists no accrediting agency for them."

Some other accreditation activities are pending. One institution has recently submitted a set of questionnaires to the Committee; they are in process of review, and were discussed in detail by the committee on Sunday, September 28, 1958. Other schools will be interviewed informally as part of the current national study of forestry education.

GEORGE B. HARTMAN
C. M. KAUFMAN
W. F. MCCULLOCH
ERNEST WOHLETZ
HAROLD G. WILM,
Chairman

Discussion of Policy Issues

W. D. HAGENSTEIN, Moderator

Panel Discussion of Wilderness Preservation

The Background of Wilderness Legislation[1]

There seems to be in America nearly unanimous opinion that the preservation of nature and wilderness areas is appropriate and desirable in our pattern of federal land management. Certainly most of the national park and monument areas, the national forest wilderness, wild and primitive areas, and many state reservations are predicated upon the perpetuation of wilderness values. Wilderness preservation has been an established concept for 40 years in National Park Service policy and for 30 years in the multiple use management philosophy of the U. S. Forest Service.

The controversy over the Wilderness Bill, therefore, does not center on whether or not we should have wilderness areas, or on whether national parks and national forests should deliberately contain such areas. The debate revolves around such questions as: how large and where should they be, how much resource utilization and motorized recreation is affected, what restrictions are necessary in use of these areas, and how well protected are they under present laws and administrative management? In short, what is a wilderness and what are its values to the American people when compared with benefits obtained through developments?

There are many who insist that wildernesses are valid only so long as they do not interfere with resource development and other mechanized use, and further that the natural topography and isolation of many areas, particularly in the West, will provide an abundance of wilderness for years to come for the limited numbers able and willing to travel in such areas. Rapidly increasing population in this country, it is stated, will force the development and maximum utilization of nearly all our land, so why obscure the inevitable by restrictive wilderness legislation at this time. Also embraced by this group is the view that present administration and legal jurisdiction over these park and forest areas is adequate protection for existing wilderness conditions.

The avid wilderness proponent, however, sees a different picture. He has witnessed in the past half-century the most thorough and rapid development of native landscape ever known in man's history—and is often offended by the final results of this expansion. He is aware of the mechanical genius of our age, which permits invasion of many regions thought impenetrable not long ago. His foresight suggests that the only undeveloped areas in a relatively short time will be those set aside and protected by national law. He also believes that wildernesses contain values that transcend those possible after development. Consequently the drafters of the *original* Wilderness Bill did not hesitate to list a variety of federal lands totaling 55 million acres—a little over 2 percent of the

[1]The author is not a proponent of the current wilderness legislation embodied in S.4028, but agreed to present information favoring wilderness legislation for purposes of discussion at the Salt Lake City meeting. Certain material presented has been extracted from a book manuscript concerning the major wilderness regions of the United States; their status, and management problems—to be published soon by the Oklahoma University Press.

land area of the United States. (Reference to specific areas has been eliminated from the present revised bill). Bear in mind that much of this acreage is already developed. Furthermore, there have been enough developments, improvements, and plans for commercial use, for both park and forest wilderness, to suggest that more stringent legal protection is necessary, if we are to have wildernesses in the future.

One feature puzzling to those most familiar with wilderness use is the tremendous, and apparently growing, sentiment for wilderness preservation among many urban residents who may never travel in wilderness areas. This sensitivity, whether logical or not to land managers and commercial interests, will have a deciding influence on wilderness legislation and reservations of the future. An interpretation of this sentiment, which has a complex fabric of roots in American psychology, is therefore appropriate.

Part of the support for wilderness comes from our European heritage, where only a few generations ago, the average man was a serf held in bondage to vast land holdings. This degradation drove many thousands to America where land ownership became symbolic, not only of opportunity for wealth and prestige, but in the words of a leading historian,[2] "land has established all our rights; on it is founded our rank, our freedom, our power as citizens." The public today, crowded into city situations, still retains a deep concern and affinity for the land— especially those lands in which it has retained part ownership—the public lands. These are major areas in which today's average man still has a voice. To vote for wilderness instead of production management or development, whose procedures are not fully understood or trusted, is logical to the urban mind.

A second well from which urban wilderness sentiment is drawn is the expanding resentment toward disorder created by man in his cities and even in the countryside—much of this related to the overproduction of goods.

This feeling has been well expressed by an internationally renowned architect[3] recently, in the following quotation: "Though American technique is the envy of the world, the 'American Way of Life' does not command unqualified respect abroad. . . . Indeed, we ourselves are beginning to suspect that economic abundance and civic freedom may not be enough. . . . Everywhere the introduction of mechanization has produced such confusion that the problems of the conversion have been more evident than the benefits. . . . For example our biggest man-made objects — our cities — have steadily grown more chaotic and ugly. . . . For all the heroic efforts of conservationists, a good deal of our loveliest countryside is being bulldozed out of existence, a sacrifice to commercial exploitation. Increasingly, patterns of taste dictated by purely commercial considerations win acceptance, and the natural feeling for quality and appropriateness is dissipated in the giddy tumble from novelty to novelty."

And another comment on our national condition by a leading economist[4] of our time: "The family which takes its two-toned, power-steered, and power-braked automobile out for a tour passes through cities that are badly paved, made hideous by litter, blighted buildings, billboards, and posts for wires that should long since have been put underground. They pass on into a countryside that has been rendered largely invisible by commercial art. . . . They picnic on exquisitely packaged food from a portable icebox by a polluted stream and go on to spend the night at a park which is a menace to public health and morals. Just before dozing off on an air mattress, beneath a nylon tent, amid the stench of decaying refuse, they may reflect vaguely on the curious unevenness of their blessings. Is this, indeed, the American genius?"

When we combine these observations with the fact that more roads, more autos, and more people almost immediately overwhelm and deteriorate some of our best natural environments, it is not hard to understand the preference for non-development or wilderness—over development, when a choice is possible. Better development and control of the huge area now available to recreationists may be necessary before opening up additional lands, in the wilderness proponent opinion.

Now, just a word about natural resource utilization and wilderness. Americans dislike to think of losing the opulence which surrounds them. Pleas that we need the resources in our last remaining wilderness regions is evidence that we may be running out. However true this may be, there is a reluctance to admit that our nation's resources are this short. The urban attitude, I believe, is to hold onto some resources in wildernesses or parks

[2]Editors of American Heritage. The revolution. American Heritage Pub. Co., New York. 1958.

[3]Gropius, Walter. The curse of conformity. Sat. Eve. Post, Sept. 6, 1958.

[4]Galbraith, John K. The affluent society. Houghton Pub. Co. 1958.

U. S. Forest Service Chief R. E. McArdle (second from right) visits with Utah State University forestry students (*L* to *R*) Mike Howard, Douglas Bird, and Joseph Biesbrock.

against a rainy day and use our favorable trade position to exploit the resources of other countries. Even substitute materials may be preferable, if the only alternative is to develop all of our remaining lands. After all, the decline of civilizations due to depletion or misuse of natural resources has been hammered into public thought for many years.

Timber shortage, for example, until recently has been the clarion call of several major forestry groups. With this conviction the public may be willing to "lock up" 3 percent of the nation's commercial timberland now in state and federal parks, national forests, wilderness and primitive areas and similar reservations — especially since 35 percent of the recently cutover lands of the U.S. now show medium or low productivity. Foresters perhaps should be given the opportunity to prove their convictions that managed lands can produce double or triple the wood volume provided by nature, before moving on into parks and wildernesses. It is interesting to note in a recent Forest Service report on the Glacier Peak country of Washington, that the Forest Service believes "it is desirable to include representative stands of virgin timber" in wilderness designations—in this case 78,000 acres of commercial timberland.

Now, as to specific provisions of the *revised* Wilderness Bill presented in Congress last June. General objectives of the bill were to bring wilderness reservations to the attention of Congress and the public in a most emphatic way (an objective now accomplished); to publicize the values and stimulate the use of wilderness; and to add Congressional blessing to wilderness reservations as well as legal provisions to deter local developmental pressures.

The present bill is conciliatory in some aspects—so much so that it may not do the job intended. It does give Congressional recognition of wilderness as an authentic part of the federal land program—a primary feature. However, the present provisions allow the Forest Service 10 years to set aside areas for permanent timber production or other development within national forest primitive areas or limited areas, such as the High Sierra of California; the North Cascade and Glacier Peak County of Washington; the Idaho, Beartooth, Sawtooth, and Selway-Bitterroot areas of Montana and Idaho; the High Uintas of Utah; and the San Juan and Flattops regions of Colorado—all large land units of the national forests. The Park Service also has 10 years in which to select areas in any park or monument for future recreation or road development. It is inconceivable that administrators would not designate adequate areas for future development within this period.

As for federal wildlife refuges and ranges, the Secretary of Interior may include in the Wilderness System, within five years, any areas or parts of areas not developed—or planned for development — that he deems appropriate. Portions of Indian lands may also be included if the tribes and the Secretary of Interior approve.

Special provisions of the bill provide that established grazing privileges and use of aircraft or motorboats may continue as before, (even motorboating on the roadless canoe areas of the Superior National Forest). The President, however, must authorize prospecting, mining, reservoir and other water conservation construction, control of insects and diseases, and roads necessary thereto, on those areas formally reclassified as national forest wilderness. The bill in no way interferes with some 850,000 acres of privately owned lands now scattered throughout the National Park system and the national forest wilderness and primitive areas. Access, development, and utilization are still permitted on these thousands of ownerships. Hundreds of mining claims and patents already control the most favorable mineral sites in wilderness, wild, and primitive areas. Provision has been made in the bill for Congressional authorization to acquire these privately owned lands, although the prospects for appropriations are slim.

Since wilderness proponents believe a great deal more attention should be focused on the values, uses, and problems of wilderness preservation, the bill proposes an ex-officio Council to gather and disseminate information on wilderness areas. This Council would be composed of the Secretary of Agriculture, the Secretary of the Interior, and the Secretary of the Smithsonian Institute, plus three citizen members appointed by the President. The citizen chairman would make an annual report to Congress on the Council operations, the status of the Wilderness System, and such recommendations as the Council deems advisable.

In summary, it appears that the bill is oriented to the proposition that a small percentage of the federal lands should be devoted to wilderness purposes in preference to the limited amount of resource utilization, restricted by this proposed legislation. It also presumes that a large share of the most scenic and desirable recreation areas in America are already open to the motoring public. And finally, that this bill should be passed before the report of the National Outdoor Recreation Resources Review Commission is available three years hence. With accelerating demands, it is believed that some important wilderness zones can go down the drain in this time.

JAMES P. GILLIGAN
University of California

Comments in Opposition to a National Wilderness Preservation System

Proposals such as the bill to create a National Wilderness Preservation System gain momentum because foresters as a group have been more interested in getting boards out of trees than concerned about the broad conservation problems facing the nation. This disinterest permits single intent groups to assume a role in shaping forest policies that may not be balanced by professional perspective.

Foresters need to bestir themselves about *all* phases of conservation. If they do not, then someone else, someone less well informed in the complex inter-relationships of resource management, may prescribe the rules and regulations. The result of such action by a militant group of city people is clearly visible in the New York State Forest Preserve.

Make no mistake about it—the will of the people will prevail. Once aroused the public may head directly to its objective without any regard for correlary uses or benefits. This could be disastrous, especially if the public demands a complete "lock-up" type of wilderness preservation. It would be a severe blow to a profession dedicated to multiple-use of forest lands.

Wilderness is a specialized kind of single use, one that is not compatible with some other uses. But in many remote forest areas it is the primary use and should be retained. Unfortunately, preservation of the wilderness hinges upon maintenance of a delicate balance between man and nature.

Man has many appetites and frequently consumes or destroys that which he cherishes most. Consequently it is easy to understand why some groups feel the need for a National Wilderness Preservation System.

The position of The American Forestry Association with respect to wilderness legislation proposals, such as S.4028, is well known. The Association's primary objection is that such legislation tends to develop a legislative history in the direction of a single and exclusive use on a perpetual basis.

The Association is especially critical of the proposal to create a Wilderness Council to be composed of the Secretaries of Agriculture, Interior, and the Smithsonian Institute, plus three citizen members to be appointed by the President.

This Council would serve as a repository for official papers regarding the Wilderness System. It would be a clearing house for exchange of information among the agencies administering the system. The Council would make surveys of wilderness need, gather and disseminate information, and consult with others interested in wilderness preservation.

There is no need to create such a Council. It serves no useful purpose. It would be an added burden of reporting, record keeping and expense for the administrative agencies of the federal government. Its creation would result in undue emphasis on wilderness and hinder orderly administration of other multiple-use activities. Furthermore, the existence of such a Council would become a precedent for the establishment of other single interest spokesmen.

The gravest fault of a Wilderness Council is that it would inject emotionalism, pressure groups, and politics into what has been sane, technical management of a natural resource.

S. 4028 and companion proposals provide that national wildlife refuges and ranges, national parks, and the primitive areas of national forests will be included in a Wilderness System automatically if the Secretaries of Interior and Agriculture do not classify them otherwise within a specified time.

It is much sounder resource management to designate areas as wilderness only after there has been a clear, affirmative determination that the values present are predominantly wilderness. Public hearings and consultations with all interested groups, local users, and subdivisions of government must precede such a classification.

S. 4028 provides that the Secretary of the Interior may designate appropriate portions of Indian reservations for inclusion in a wilderness system after "consultation" with the Indians. Incidentally, this is a step backward from present Department of the Interior policies which require "consent" of the Indians in any matters affecting their welfare.

Why are Indian reservations included? Indian lands are private lands under a federal trusteeship and some day they will be returned to full Indian control. There is no justification for imposing restrictions on the Indians that would not apply also to other privately owned lands.

Finally the creation of a National Wilderness Preservation System tends to encourage the separate treatment of these areas. This is an undesirable provision, one that is contrary to the established programs of the public land management agencies. The Departments of Agriculture and Interior have managed their wilderness areas well under existing law. There is no need to alter this arrangement.

We come now to the fork in the road. Will professional foresters permit the public to grope along with little or no technical guidance and assistance? Or will we get in there and pitch; call upon the specialized biological, ecological and sociological skills at our command; and help devise a charter that will maintain wilderness and at the same time insure an adequate supply of all other resources for future generations.

The choice is yours.

KENNETH B. POMEROY
American Forestry Association

Wilderness Bill Not in Conflict with Other Interests

(The speaker expressed his appreciation, as a non-member of the SAF, at the invitation to participate in the discussion as well as to present a paper to the Division of Forest Recreation later in the meeting.)

The Wilderness Bill is a measure designed to fit in with economic and other programs and not to conflict with them.

What the bill most needs is to be clearly understood! Its provisions will in no wise damage existing programs and interests. It gives Congressional recognition to wilderness as part of a multiple use program.

We need the Wilderness Bill because we cannot expect any of our areas to endure as wilderness accidentally. All of our land is destined to be put to some human use. If we want wilderness we shall have to set aside definite areas deliberately for that purpose. Only those areas that are deliberately set aside as wilderness and positively protected as such can be expected to remain wilderness.

This is a governmental undertaking, of course, in our society, and because most of the lands now available are federal lands, this must be largely a federal program.

So we need a national policy and program. Yet within none of the areas where wilderness still exists is it protected as wilderness by Congress. There is no law establishing a national wilderness preservation policy, nor any statute authorizing a national wilderness program.

Wilderness-preservation programs and purposes fortunately *have* been developed in connection with the administration of national forests, national parks, wildlife refuges, and other publicly owned or controlled areas that contain wilderness. Within these areas we have an opportunity to establish a national wilderness preservation program—inside our national forests, parks, refuges and other areas where wilderness can be preserved without damaging any other interests.

This is what the Wilderness Bill does:

It is needed because without its Congressional sanctions, the excellent administrative programs so far successful cannot be counted upon to endure in the face of pressures that obviously are increasing.

It is urgent because wilderness preservation can now be fitted into our overall program without conflicting with such other economic programs as timber production, but this opportunity to establish a wilderness policy and program without conflict cannot be expected to last forever.

Establishing such a policy and program in our fast-moving mechanical civilization becomes increasingly difficult the longer it is delayed.

The Wilderness Bill is a measure that has been carefully worked out over a period of years in a cooperative, constructive program that respects economic and other interests.

It gives permanence to programs that have already proved desirable.

It damages no other interest or program.

It involves no new land-management agencies but rather fits into existing programs.

It includes provisions for change; it locks no door without also providing a key.

It preserves the wilderness character of lands serving multiple purposes and safeguards these areas for the permanent good of the whole people—not for any special interest or single use and not for the selfish interest of any individual or group.

What it most needs is understanding.

HOWARD ZAHNISER
The Wilderness Society

Professional Practice Should Be Permitted

Maximum yields of usable water, timber, forage, and game are not the products of "leave-it-to-nature" management. Our profession has developed the knowledge and techniques that permit the guidance of natural forces to better fill human needs. This is also true in forest recreation, including the wilderness type.

Man can and does help nature to provide better wilderness recreation. My family and I, for example, have appreciated the prepared trails, the signs, the fishing in artificially stocked lakes, and the improved springs that we have found in such areas.

The forester's services will be and should be in increasing demand as a means of maintaining the optimum recreational potential in wilderness areas. Our knowledge and tools must be used if the demands for forest recreation are to be met.

Nature is often violent. The damage done by fire, insects, wind, and disease may greatly reduce the attractiveness of isolated forest areas. We know how to prevent or lessen the damage of such calamities. Nature will heal her wounds, but the natural process is a slow one. We cannot and do not have to wait for the natural repair of the damage to the forest cover. We can speed the return of the forest to an attractive condition.

These things are possible if the forester is given the opportunity to use his knowledge and skill in the management of recreational areas. This has been demonstrated on three national forests in Southern California. There it has been shown that the logger is not necessarily a sword of destruction, but can be the knife of the skilled forester-surgeon—an essential tool in the maintenance of the recreational forest resource. Further, the logger is an unusual instrument in that he pays more than the cost of returning the patient to health.

Just as heart surgery has become a valuable technique to the preservation of human life, so may logging, for example, be used in the future to save wilderness. (There is good reason to believe that we can develop machines to remove logs without unsightly construction.)

However, we must remember that there was no restrictive legislation that prevented the heart specialists from doing what was necessary for the health of their patients. Other than the requirement of professional competence, there should be no strings on the public forestry agency charged with maintaining wilderness areas for recreation. The only accounting should be of the agency's success in meeting the objective for which it was financed.

Since the proposed National Wilderness Preservation Act would hinder the public agencies in carrying out their responsibilities to preserve the wilderness in designated areas, we should oppose its enactment. Public foresters should have the opportunity to practice their profession. The bill should be defeated.

GEORGE A. CRAIG
Western Lumber Manufacturers', Inc.

Some Comments on the Revised Wilderness Preservation Bill

What the bill proposes to do.—S. 4028 proposes to "secure dedication of an adequate system of areas of wilderness" and to provide for their protection. No attempt is made to define what is "an adequate system of wilderness." It would set up a "Wilderness Preservation System" to include at the outset some 50 million acres of federal land within national forests, national parks, national wildlife refuges and ranges, and Indian reservations which are classified as wilderness. All but a small percentage of this acreage is located in the 11 western states.

It would superimpose a "Wilderness Preservation Council" between the federal land administering agencies and the Congress whose voting members would consist of three "persons known to be informed regarding and interested in the preservation of wilderness." The duties of this new government body would be to serve as a clearinghouse of wilderness information, make surveys of wilderness needs and to "consult with, advise and invoke the aid of appropriate officers of the United States Government and to assist in obtaining cooperation in wilderness preservation and use among federal and state agencies and private agencies and organizations concerned therewith." The Council would be authorized to accept private gifts and benefactions to be used to further the purposes of the act.

Additions to wilderness system. — While proponents of S. 4028 maintain that the bill only provides an additional cloak of protection around existing areas classified as wilderness to help render them inviolate, there are provisions which make possible and foreshadow considerable expansion of the proposed Wilderness Preservation System. For example, the following language remains in the revised bill: "Pursuant to this policy *the Congress gives sanction to the continued preservation as wilderness of those areas federally owned or controlled that are within national parks, national forests, national wildlife refuges, or other public lands and that have so far retained under their federal administration the principal attributes of their primeval character.*" Does this mean that all federal areas now roadless can be added to the System under the bill?

Another provision for additions is contained in the following language in the bill: "Within any unit of the Wilderness System the acquisition of any privately owned lands is hereby authorized to be appropriated out of any money in the Treasury not otherwise appropriated."

Proposed additions to the Wilderness System, as well as modifications and eliminations, are to take effect unless Congress passes "a concurrent resolution opposing such proposed addition, modification or elimination." The bill mentions continuous areas of 500 acres or more as being eligible for wilderness status.

Use of areas in wilderness system. — The federal agency "administering any area within the Wilderness System shall be responsible for preserving the wilderness character of the area. "Wilderness is hereby recognized as an area where the earth and its community of life are untrammeled by men." All use of such areas shall be "in harmony, both in kind and degree, with the wilderness environment and with its preservation."

Specifically, "no portion of any area constituting a unit of the Wilderness System shall be used for any form of commercial enterprise not contemplated in the purposes of this Act," except that grazing of domestic livestock may be permitted to continue

on national forest areas in the System where it has already become well established but "subject to such restrictions as the Secretary of Agriculture deems desirable."

No permanent road shall be permitted nor any use of motor vehicles, motorized equipment, nor any other mechanical transport or delivery of persons or supplies, nor any temporary road or any structure or installation exceeding "the minimum required for administration of the area for the purposes of this Act." Use of aircraft or motorboats may be permitted to continue within national forests subject to restrictions where these practices have already become well established.

"Prospecting, mining, the establishment or maintenance of reservoirs and water-conservation works and such measures as may be found necessary in control of insects and diseases, including the road construction found essential to such mining and reservoir construction" are to be permitted within the System *only* in national forest areas and *only* after authorization of the President of the United States.

There is no specific provision in S. 4028 for protection of the areas against fire. There may or may not be sufficient latitude for such protection in the following vague language: "the areas within the Wilderness System shall be so managed as to protect and preserve the soil and the vegetation thereon beneficial to wildlife" and "nor any temporary road (shall be permitted) . . . nor any structure or installation, in excess of the minimum required for the administration of the area for the purposes of this Act." It is hard to imagine the development of effective fire control in the areas under these provisions.

The Wilderness Bill as public policy.—The Wilderness Bill, if enacted, would be poor public policy. It would establish legislative sanction of single-use management of millions of acres of federal forest lands. The single use thus sanctioned would be a very minor though important one. Millions of acres of national forest land would be thrown into the proposed Wilderness System without studies being made to determine their highest use and without hearings, due to a provision in the bill that Primitive Areas not reclassified within 10 years will automatically become a part of the System. This is true because most of the 14 million acres of wilderness withdrawals on the national forests are still Primitive Areas subject to study and reclassification and most of them cannot reasonably be expected to be reclassified within 10 years.

The need for this bill has not been demonstrated. Career federal land administrators have been and are doing a good job of reserving areas of wilderness and resolving land use conflicts after proper study. The bill implies either dissatisfaction with the job they have done in this regard or a lack of confidence in their decisions. It supplies them with a public advisor (the Wilderness Council) which is prejudiced in favor of management of federal lands for a minor single use and which will have as one of its duties the influencing of these agencies in land-use decisions. The bill constitutes an attack on the purposes for and the authority under which national forests were established by the Act of 1897. Although the bill declares that its purposes are not in interference with this Act, the fact remains that the legislation would interfere with it.

S. 4028 is a special interest bill and opens the door for other special interest demands on our federal lands.

This legislation is particularly ill-considered now in view of Public Law 85-470 which established an Outdoor Recreation Resources Review Commission to survey the recreational needs and potential on all lands in the United States and report to Congress by 1961. Any bill which presupposes what those recreational needs are and sets aside millions of acres for a specific type of recreation is untimely.

Conclusion.— Opposition to the revised Wilderness Bill does not imply or mean opposition to wilderness as a legitimate part of the multiple-use concept. For example, the American Forestry Association, which sponsors trips into wilderness areas to promote increased use of such areas, is opposed to this bill.

To a great extent attitudes toward this legislation are determined by the answer to this question: In whom do you have more confidence in the determination of federal land use—career land administrators or an appointed commission?

This legislation is not needed. The net acreage of dedicated wilderness in the United States is on the increase and has not been shown to be inadequate to meet foreseeable needs.

The purposes of S. 4028 can be accomplished by a bill which merely gives recognition and sanction to the continued use of areas of federal lands for wilderness when such areas have been set aside after study and a determination that wilderness use is their highest use. But really such legislation is not needed.

There is an untold and increasing supply of wilderness-type areas on both public and private lands throughout America in addition to lands already dedicated or certain of designation as wilderness reserve. Such lands have the added merit of easier accessibility.

The comments above are not intended to be a complete discussion of the revised Wilderness Preservation Bill. They are rather an attempt to state some of the less obvious reasons why this legislation is objectionable to western people whose livelihood depends on the wise management of the natural resources of the West.

H. R. GLASCOCK, JR.
Western Forestry and Conservation Association

Statement of Oral Comments by E. C. Crafts (U. S. Forest Service)

In response to an inquiry as to the stand taken by the U. S. Forest Service on the proposed legislation, Mr. Crafts pointed out first that his remarks would represent the views of the Department of Agriculture and of course, included those of the Forest Service. The Department, he said, was in sympathy with the objectives of the bill and had recommended its enactment as far as the Department of Agriculture's activities are concerned if three major and several minor amendments are adopted.

1. All provisions regarding a Wilderness Preservation Council be omitted.

2. Authorize the Secretary of Agriculture to make decisions on pest control action on areas within the Wilderness System rather than requiring Presidential decision.

3. Primitive areas now in the national forests should be temporarily included in the Wilderness System but should remain there only if the Secretary of Agriculture, within 15 years, determines them to be predominantly of wilderness value. The Secretary should be directed to make such determinations within the specified time.

Statement of Oral Comments by Emanuel Fritz (Consulting Forester)

Mr. Fritz stated that he thought the legislation "asks for too much" and that the Council was unnecessary and would tend to expand its authority after being formed. Conservationists are not, he said, looking at the basic

problem—that is to control population.

Statement of Oral Comments by J. P. Gilligan

Population forecasts are not reliable. They should be confined to shorter periods in discussions of matters involving them. The area now considered in wilderness legislation could be reduced without serious damage to the system. Laws are not irrevocable; they can be changed if needed at a later date.

State of Oral Comments by K. B. Pomeroy

An Outdoor Recreation Resources Review Commission has now been appointed. The whole matter of legislation should be postponed until this Commission's report has been made.

Statement of Oral Comments by Howard Zahniser

Responding to Pomeroy's comment on the Outdoor Recreation Resources Review, Zahniser said that passing the Wilderness Bill promptly would in fact contribute to the success of the Outdoor Recreation Resources Review Commission. He considered the urgings to postpone wilderness legislation, until after the Commission's study would be completed, as arguments against the Wilderness Bill rather than efforts to help the Recreation Review. He quoted Conservation Director Joseph W. Penfold's testimony in behalf of the Izaak Walton League at the July 23, 1958 hearing held by the Senate Committee on the Wilderness Bill and pointed out that Penfold, an outstanding champion of the Outdoor Recreation Resources Review proposal, had been appointed by the President as a member of the Commission. Zahniser quoted Penfold as telling the Senate Committee that "adoption by Congress of the principles of wilderness preservation will assist the Commission positively in securing the evaluated data which Congress and the rest of us will require to do an adequate and constructive job of planning for America's outdoor future, including its wilderness aspect. With wilderness preservation adopted as public policy by Congress, the ORRR Commission will have a far more firm base from which to launch its studies of wilderness as part of and as related to, the total outdoor recreation resource, as well as in its relationship to the rest of outdoor America, present and future,"

Reading from a news report on the July 23 hearing in the Summer-Fall 1958 issue of *The Living Wilderness*, Zahniser pointed out that when Senator Clinton P. Anderson's spokesman at the hearing asked if the Commission's studies "will be hampered in any way by a failure to enact this wilderness legislation," Penfold replied:

"I think that their operations *will* be hampered. Or put it the other way around. I would rather put it the positive way. If Congress does adopt essentially this Wilderness Bill, the Commission will be off to a head start in making the kind of evaluation they want."

Discussion of Aerial Spraying of Woodlands with Pesticides

The Advantages of Aerially Spraying Woodlands with Pesticides

I shall confine my comments about the advantages of aerially spraying woodlands with pesticides to the insecticidal phase of that broader subject. Time limitations won't permit me to also treat herbicides and fungicides. Moreover, I suppose the aerial dispersal of insecticides is the field of principal interest to this group because of its alleged and much publicized damaging side effects.

Before citing the advantages of aerial spray operations, let me make clear at the outset that I am fully aware, as are most control personnel, that a complete program of pest control includes many activities besides the application of chemicals to kill insects.

Harvesting programs are used wherever feasible to remove infested and susceptible trees from the forest. Access roads are necessary to make such harvesting programs possible. Better utilization methods are needed to make it a paying proposition to log low-value decadent and susceptible material. Silvicultural and biological practices are also applied wherever possible to hold pest hazards at minimum levels. All these measures and others, such as the use of resistant trees, play a part in a fully implemented program for controlling destructive pests, and they will be utilized more and more as research points the way.

However, when preventive practices and nature's balances fail to keep an injurious insect in check, direct control action is called for. Today, this generally means insecticidal control. For defoliating insects it means aerial spraying.

A look at natural controls. — Although *cultural control* holds much promise in checking pest activity and is being increasingly used as our first line of defense against many diseases and insects, cultral measures have little current application in combatting insect epidemics. Unfortunately, epdemics of defoliators, in destructive force, continue to threaten our forests on a scale that has been exceeding one million acres annually. Cultural measures are good preventive medicine, but where they fail, or cannot be applied, as is generally the case today, we must look elsewhere for remedial action.

Biological control is in much the same category. Pitting insects against insects, or diseases against insects, to serve man is an intriguing field. There have been examples of outstanding successes. Unfortunately, however, there have been more examples of failures than successes. In most instances, native pests and their natural enemies tend to maintain a biological balance. Oftentimes, however, natural balances are broken, and destructive insects multiply to epidemic proportions, and forest resources over extensive areas are then threatened. Thus far there has been little we can do to change this situation by artificially altering the parasite-predator complex. Although we are pushing our research on biological relationships, we must, for the time-being and for some years ahead, rely on aerial spraying as our No. 1 weapon against epidemics of foliage-feeding forest insects. Either that or do nothing.

Aerial spraying is effective.—Aerial application of a formulated DDT spray properly applied at a dosage rate of one gallon per acre, kills from 90 to 99 percent of the insect pest in an outbreak area. Aerial sprays thus reduce an epidemic population to an endemic level—to the point where nature's checks and balances usually can take hold and keep the popula-

tion at low levels until another breakdown of natural controls takes place.

Aerial spray work is economical.—Control costs vary from $0.75 to $2.50 per acre, depending on the size and location of the area to be treated. Translated to a board foot basis, control costs range from 5c to 10c per M. Furthermore, spreading spray costs over the several years aerial spray control remains effective, further reduces the annual protection investment. By whatever the price tag placed on trees for stumpage, lumber, pulp, or for recreation, the cost-value ratio is a few cents versus several dollars.

Defoliating insects are destructive.—Defoliating insects — the foliage-feeders—have a long history of destructiveness. Under epidemic conditions they have inflicted monumental damage to our forests—damage that has run into many millions of dollars for each major outbreak. Severity of damage varies with the intensity of the insect epidemic and the length of time the trees have been fed upon. It ranges from growth loss, deformity, top-kill to complete destruction. Hundreds of thousands of acres of forests have been devastated when epidemics by defoliating insects ran their natural course. Likewise, trees weakened by defoliators often fall prey to quick-killing bark beetles. Dead tops open the way to wood-rotting fungi. Insect-killed trees increase the fire hazard and the severity of fire losses, should a fire start. The full impact of an unchecked insect epidemic is the over-all effect upon the community, timber, recreation, fish and wildlife alike, plus the time required to heal the scars and restore all the forest benefits. Add to this the weight of a terrific forest fire hazard that is created with its massive threat to all renewable forest resources. Yes, an unchecked insect epidemic can easily result in vastly more damage to forest values, including fish and wildlife, than that which can logically be attributed to chemical controls.

Properly done aerial spraying is relatively safe.—Dispersing insecticides by airplane is not the bogey man operation it is often called. Most of the recent criticisms leveled at aerial spraying of woodlands is unwarranted, and some of it is misleading. This is unfortunate, as it makes more difficult the job of working with affected groups in an objective and constructive evaluation of the problems that do arise from aerial spray programs.

The most recent authoritative statement about the standards of aerial spraying was given by Judge Bruchhausen of Brooklyn, N. Y., on June 23, 1958, when he summarized the arguments of some 50 witnesses who had branded as dangerous the aerial application of DDT in the Long Island, N. Y., Gypsy Moth Eradication Program by saying:

"The Court concludes that the plaintiffs failed to sustain their claim that the subject spraying was injurious to health or that spraying causes any considerable loss of birds, fish, bees or beneficial insects. Only a few fish and birds were killed in the subject area. Furthermore, evidence of spraying programs throughout the country demonstrates that the fish, bird and bee loss has been inconsequential."

The hazard of aerial spraying depends upon the dosage, the manner in which insecticides are used, and on the frequency with which they are applied to a given area. We know that insecticides are toxic to some forms of life other than the insects under attack, and that if sufficient amounts are used serious consequences can result. Insecticides are poisonous just as the drugs we take in pills are poisonous when not used in accord with directions. An overdose of many beneficial things can be dangerous. This is as true for insecticides as for medicines. It is even true of pure water.

Most of you are familiar with DDT, the chemical commonly used in aerial spraying for forest insect control, and the place it occupied in World War II; also what its proper use meant to the health and welfare of the people of the world. General toxicity studies and toxicity thresholds for fish and wildlife, pharmacological analyses, entomological investigations and the residual characteristics of DDT have been studied for more than 15 years. It is, therefore, not without background that this chemical, one of the best known of the new insecticides, is used.

I am convinced from our record in dispersing DDT from airplanes, an experience that extends over ten years and involves more than ten million acres of forest land, that where insecticides are properly applied by trained people in accord with carefully predetermined plan, damage to forest life will be within acceptable minimal limits.

In all our aerial spraying of DDT at the dosage rate of 1 lb. per gallon per acre, we have never observed any ill-effects on either mammals or birds, nor has any evidence of injury been called to our attention. The record with respect to fish kill has not been particularly unfavorable. We have noted sporadic fish mortality in some streams in spray areas but these instances have been infrequent and ordinarily of minor significance. Nevertheless, our studies of fish damage, performed in cooperation with federal and state fish biologists, do indicate that disturbance to fish populations, although not alarming, can on occasion be serious. These studies have prompted us to rigidly tighten our precautionary measures when spraying near important fishing waters. We know that if DDT gets into streams and lakes it may cause sharp reductions to aequatic insects which are important fish food. These reductions have been found to be temporary, however, and the return to normalcy is usually fairly rapid.

We know also that aerial spraying with DDT kills some parasites and predators of the insect pest under attack. However, the fact remains that the parasite-predator relationship in areas aerially sprayed for spruce budworm control, both in the United States and in Canada, has remained essentially unchanged. Research has shown no reduction in the ratio of primary parasites to their host between sprayed and unsprayed areas. As a matter of fact, primary parasites are often relatively more numerous on sprayed areas than on unsprayed areas.

Another hypothesis is that aerial spraying might prolong a pest outbreak. This might be true under certain peculiar circumstances, or against certain insects, but we know of no evidence to indicate it has happened so far following extensive programs in this country or Canada.

About spider mites — Pest Control personnel are aware of the relationships between DDT and outbreaks of spider mites in agricultural spraying. The likelihood of a similar association was anticipated when aerial spraying of forests was first undertaken. However, ten years passed and nothing happened. Then, in 1957, we experienced a disturbing mite outbreak in areas sprayed for budworm control the year before. The situation looked bad in 1957. It has much improved in 1958. Current indications are that the mite outbreak will subside without causing

a serious damage. Nonetheless, it is now known that on occasion, in perhaps one year out of ten, mites can become a problem in spraying woodlands with DDT. We are accordingly initiating studies of the situation to see what can be done to avoid a mite outbreak, and what to do about it in case one occurs.

In conclusion, I wish to emphasize that I appreciate the importance of preventing or minimizing losses to all forest values that might be adversely affected by aerial spray programs. The impact of a pest outbreak, along with measures for its control, are given full consideration for each forest value that is affected and upon the forest as a whole, and the advice of experts is obtained before control is undertaken.

We recognize that there are some problems connected with the use of insecticides. For this reason we are continuing our search for other chemicals and for other methods of control. However, we hold, that in order to provide the greatest over-all benefits and protection to our forests, it is best to accept a limited calculated risk to a small portion of our natural resources in order to safeguard the whole. When the disastrous and long-lasting effects of an uncontrolled insect epidemic are weighed against the possibility of temporary upsets, the advantages of control seem overwhelming.

W. V. BENEDICT
U. S. Forest Service

Application of Insecticides to Forests: The Negative Side

To spray or not to spray is a serious question, but all too often it is considered lightly. The assumption is made that the control of forest insects by chemicals affords a cure-all that will correct all our insect troubles and that other means of control need not be considered. That such is not the case will be set forth herein.

In considering the question of insect control with poisons several things must be kept in mind.

First is the reproductive capacity of insects. Insect pests, if unrestricted, are able to reproduce themselves geometrically at an unbelievable rate, commonly ranging from 50 to 300 fold or even more for each unrestricted generation. Thus from inconspicuous numbers they are able to reach almost astronomical proportions within a few generations. Ninety-eight percent control by spraying seems excellent, but if the two percent remaining should be unrestricted by environmental factors in their rate of reproduction and should increase 50 fold, the population will have returned to its original number in the succeeding generation.

Fortunately, unrestricted multiplication seldom, if ever, occurs in nature. Adverse physical conditions, shortage of suitable food, the activities of parasites, predators, and competitors prevent its full attainment. But since no insecticidal treatment has ever killed 100 percent of the pests against which it is applied, these agencies must always be present to a greater or lesser degree to supplement the effects of insecticides. Otherwise, no spraying operation that I have ever seen could have controlled an outbreak.

From here we might go on to consider the effects of insecticides on parasites, predators, and competitors and argue against the use of poisons on the grounds that those organisms are destroyed. But unfortunately we have little quantitative evidence to demonstrate what the effects of poisons on these organisms actually are. All that we can say with confidence is that many of those in an exposed position will be killed, and, with the elimination of each species, the environmental complex becomes simpler.

Therefore, we must conclude that since *complexity leads to stability* and conversely *simplicity leads to instability*, the destruction of any part of the natural environmental complex will increase the probability that future outbreaks will occur. It is for this reason that spraying inevitably leads to the need of more and more spraying. Is this a pleasant prospect for the forester?

Another general principle that must be remembered is this. The environmental conditions that contribute to outbreaks of forest insects are very specific, and are not common to all locations where the host trees occur. These special conditions may result either from natural causes or the unwise practices of man, but in either event they are essential to the rapid increase of the insects.

Once the table has thus been set for the insect an outbreak sooner or later is inevitable. Frequently the outbreak is triggered by a sequence of weather, either favorable for the insects or adverse for its natural enemies. Thus outbreaks are the result of specific environmental situations. Reduction of an insect's numbers by the use of poisons in no way improves the situation. Therefore, after spraying, repeated outbreaks may be expected until the forest conditions have been changed to an unsusceptible state.

From this statement of the situation it is clear that the application of poison inevitably affects the environment deleteriously by causing its simplification; that treatments with insecticides leads to the necessity of more and more insecticidal treatments; that without the aid of natural enemies of the pest no spraying program could be effective; that at best control of forest pests with insecticides is a stop-gap, a delaying action, and by no means a true cure; and last, but by no means least, the popular misconception as to the true merits and demerits of insecticides has led to their acceptance as a cure-all, with the result that almost irresistible pressure is brought upon foresters and forest entomologists to support spraying programs which they otherwise would oppose.

The best way to illustrate the dangerous trends that are developing or actually have developed is to cite specific instances of spraying projects that I have seen personally and to evaluate each one in terms of its necessity and consequences.

In each case the decision to spray was made in good faith, and to criticize the men responsible by referring to a project by name and location would be unfair. However, each is a true case that has come under my personal observation. In each case on the basis of my experience I should have opposed the application of insecticides either because economically serious losses were unlikely, or because a cheaper and better method of control was available.

Case No. 1.— An outbreak of jack pine tortoise scale had reached a stage when ladybird beetle larvae were so numerous that the end of the outbreak was evident. It was sprayed in spite of this condition. The following year both sprayed and unsprayed trees in the locality were free of scales and little injury resulted from the outbreak.

Case No. 2. — Another stand of young jack pine, this time was infested by the budworm. The outbreak obviously was the result of population buildup on scattered overmature trees. A timber sale of these trees had been arranged for, but on advice of an entomologist, this silvicultural control was abandoned for a spraying oper-

ation. Result—death of the budworms, preservation of the hazardous condition that brought it about, and later a severe outbreak of pitch midge that cannot be controlled by spraying.

Case No. 3.—A comparable situation in Douglas-fir, a young stand overtopped by scattered overmature trees. Although a logging operation was indicated to check the outbreak, spraying was done instead, leaving a still hazardous situation. Insects were largely killed but lateral shoots on which living pupae were still present after spraying proved that after the end of the larval feeding period the lateral shoots had elongated six or more inches. Damage to the young stand could not have been caused by the defoliation experienced and as for the overmature trees, some of which might have died, at least three or four years were available for salvage. A logging operation was indicated as the most economical way of meeting the situation.

Case No. 4.—In another stand of Douglas-fir, larvae were dropping from trees and were covering the ground with a mantle of silk, a certain indication of the end of an outbreak. This area was sprayed although to one familiar with budworm outbreaks it was a waste of time and materials.

Case No. 5.—A large area of jack pine heavily infested by the budworm. A spraying operation was planned out, but, on the insistence of two men, who on the basis of a last minute survey decided that the outbreak was declining, courageously reduced materially in size the area to be sprayed. These two stood alone against the opinions of all others concerned. Fortunately for them the natural decline of the outbreak proved that they were right.

Case No. 6.—This is a multiple example including numerous instances in the Lake States where spraying operations for Saratoga spittle bug have been conducted in plantations too open and on sites too poor to produce a crop of sufficient value in wood to offset the cost of spraying.

Numerous other similar cases might be cited, but these will serve to cast grave doubts upon the extravagant claims of the insecticide enthusiast.

Bear in mind that the use of poisons in a forest should be in the nature of a last resort after other means of controlling insects have failed, and should never be our first line of defense.

S. A. GRAHAM
University of Michigan

Comments

Dr. Graham and Mr. Benedict both have stressed that aerial spraying, a form of chemical control, is an emergency measure to be used only when biological and silvicultural controls fail. I agree. We must keep all three methods, because no one is applicable to all insects in all situations.

In retaining chemical control, we have a public responsibility to make sure that chemicals are applied only when urgently needed, and that all possible precautions are taken to minimize damage from spraying. The Pest Action Councils, representing ownership, management, and research, are doing a good job of evaluating control needs. The Councils should publicize their work more. Despite much clamor to the contrary, management and research also are doing a good job in keeping damage to a minimum. They should and can do better.

In Oregon and Washington we have sprayed 4¾ million acres to control the spruce budworm. The main goal has been attained — the forests have been protected with minimum losses. Natural control has been restored.

In attaining this goal, we have killed some fish, as others have done elsewhere. But the fish kill has been far from catastrophic. World-famous trout streams, such as the McKenzie and Metolius, have been sprayed with no adverse effect upon fish catch.

There has been some loose talk of our creating biological deserts in small streams. I have examined such streams. Aquatic insects, the normal food of fish, were much reduced by spraying. Some fish died, but many survived. Some of the smallest ones still were alive and doing well in the so-called deserts.

Foresters have a big job ahead in regaining public confidence in forest spraying and retaining this valuable tool of forest protection. Under the new federal legislation authorizing the Fish and Wildlife Service to assess the effects of insecticides, fungicides, and herbicides upon wildlife, foresters have a real opportunity to work with the game specialists. I might say that it has been generally overlooked that the Fish and Wildlife Service played a key role in developing and testing the aerial spraying procedures now in use.

Research foresters have a special job of searching for chemicals that are as effective as DDT against insects, yet less toxic to wildlife. They also must find better ways of applying chemicals exactly where they are needed. These things can be done. The important thing is to get on with this technical work. We also must keep the public advised of the true facts. We must regain ground that has been lost to the fanatics who confuse DDT with atomic fallout. I urge that the Society take on this publicity job as a major project.

ROBERT L. FURNISS
Pacific N.W. Forest and Range Expt. Station

Comments

You are doubtless aware that our New England Section, SAF, has appointed a Committee on Aerial Application of Insecticides under the chairmanship of Bill House to make an objective appraisal of the facts on hazards and benefits of aerial spraying of insecticides and to propose a suitable resolution regarding them for consideration of members of the Section. I have the honor of being a member of this committee and we hope to report to the Section during the next few months. This seems very pertinent to the discussion of the panel this afternoon.

At the beginning of this discussion your moderator referred to the spruce budworm spraying program described in the annual report of the Canadian International Paper Company. You might be interested in some elaboration of that report.

The last previous outbreak of the spruce budworm in New Brunswick lasted from 1912 to 1920. All the spruce-fir forests were attacked. The balsam fir was more or less completely killed over large areas and much of the spruce also died. Large 30 to 35 year even-aged stands of nearly pure balsam fir originating following these attacks are mute evidence today of the extent of the damage done to the then existing stands. They were neither harvested nor burned; they were destroyed by the budworm. The present attack became serious in New Brunswick in 1949 with 200 square miles severely attacked in 1949, and rose to 20,000 square miles severely attacked in 1957. In 1952, 6 percent of the severely attacked area was sprayed and this was increased to 40 percent sprayed in 1957. In all, 8,100 square miles were sprayed in New Brunswick from 1952 to 1957. Of this, 14 percent was sprayed once, 55 percent twice, 28 percent three times and 3

percent four times.

Studies indicate that balsam fir trees killed by the budworm became unsalvageable due to decay within two years after death. Furthermore, each year spraying was restricted to those areas of high hazard where a year's further delay would seriously threaten the life of host trees. The spraying was therefore clearly recognized as only a dire emergency measure like the ministration of adrenaline to the sufferer of a heart attack. No attempt was made to eradicate the insect and no hope was held that this was a lasting cure. The spraying was used to keep the trees alive until the attack passed due to other factors.

It should be emphasized that carefully controlled experiments and meticulous research studies and records accompanied every step of the program. This control was provided by the entomologists of the Forest Biology Division, Science Service, Canada Department of Agriculture.

Studies were being carried on prior to the spray program and concurrently with it in the Miramichi, Restigouche and upper St. John River watersheds in New Brunswick by scientists of the Atlantic Salmon Fisheries Station, Fisheries Research Board of Canada. On the basis of these studies, forecasts indicate that the stock of adult salmon in the Miramichi area may drop to 50 percent of normal level in 1960 and 25 percent in 1961. Fortunately, the adult salmon that are available for capture in any year are not all of one age group. It is, of course, unfortunate that some areas have to be resprayed with DDT in succeeding years. Some hope is held out for fish culture methods to offset successive spraying. DDT aerial spraying definitely accounts for some loss of fish and where this is severe the value of the forests must be compared to the value of the fish lost.

LOWELL BESLEY
Pulp and Paper Research Institute of Canada

Statement of Oral Comments by George Hjort (Boise Payette Lumber Co.)

Those who are against the aerial spraying of forests do not recognize its economic value. We are unable to wait a year to log ponderosa pine, inland fir, and spruce so that logging after trees are dead is often not economical. Aerial spraying is the last resort in an emergency. Perhaps some past spraying has been needless, but do we know? More research is needed on this matter and on predicting when epidemics are building up: we should then spray when proven necessary.

Report of the Division of Education

The Division of Education met at 7:30 p.m. September 29 in the Hotel Utah. The subject "Is a Summer Camp Necessary in Forestry Instruction?" was discussed by a panel consisting of Paul Y. Burns, John W. Barrett, Ralph Bryant, Robert N. Colwell, and W. F. McCulloch, with William C. Bramble as moderator.

At 9:15 p.m. Chairman A. B. Crow called to order the business session. About 175 members were present.

The slate of officers nominated for 1958-1959 was elected unanimously. New officers are:

Chairman—Peter W. Fletcher. University of Missouri, Columbia, Mo.

Vice Chairman—William C. Bramble, Purdue University, Lafayette, Ind.

Secretary—John Carow, University of Michigan, Ann Arbor, Mich.

A report of the Safety Committee presented by Charles Johnson will be passed on to the new officers for study and a report at next year's meeting.

WILLIAM C. BRAMBLE
Secretary

Report of the Division of Forest Products

The Division of Forest Products opened its annual meeting at 7:30 p.m. September 29 in the Hotel Utah with two papers about logging. Francis Herman presented results of a study of slack and tight high line logging methods adapted for use in the Central Rocky Mountains. Ralph D. Hodges presented the experience of the Big Bear Timber Company in logging recreational areas.

A short business session followed these papers. The only item of business presented was the election of officers. Chairman Harry E. Troxell called for a report of the nominating committee. There were no other nominations from the floor and a unanimous ballot was cast for Bernard M. Granum, *Chairman,* Rudolph Grah, *Vice Chairman,* and Harvey D. Erickson, *Secretary.*

Dr. Herbert Flicher reported on the existence of a new organization of wood technologists, a professional society through which they can pursue their fields of interest. Organized as the "American Institute of Wood Engineering" with temporary headquarters at Madison, Wis., this group will have a three-year trial period and invites the interest of all foresters engaged in the fields of wood engineering and wood technology.

The program was continued with a discussion of sawmill designs for efficient utilization of small logs by Milton H. Mater.

An outline of the uses to which the species of this area are adapted was presented by Edward S. Kotok.

An entirely new application of wood recently developed at Washington State College was reported by John W. Talbott, "Flapreg," a board formed with resin impregnated wood flakes and particles, has many interesting applications where densified wood is the most desirable product because of its strength and insulating properties.

BERNARD M. GRANUM
Vice chairman and acting secretary

Report of the Division of Watershed Management

Chairman Peter W. Fletcher opened the eighth annual meeting of the Division of Watershed Management promptly at 7:30 p.m. in the Hotel Utah September 29.

The program of ten short papers limited to approximately 12 minutes each permitted a wide variety of subjects and gave a number of the younger members an opportunity to report. Those presenting papers included George W. Craddock, L. K. Clark and Edward L. Noble, Arthur W. Nelson, Jr., Walter S. Hopkins, Earl F. Aldon, Lowell R. Rich, Richard B. Marston, Bertram C. Goodell, H. W. Anderson, Raymond M. Rise and Allen J. West, and Earl F. Aldon and Willie R. Curtis.

A short business meeting was held to elect a new secretary for the coming year. In accordance with the procedure adopted in 1957 at Syracuse, the vice chairman and secretary automatically advance to chairman and vice chairman respectively. Officers for the coming year are:

Chairman—Sidney Weitzman, Lake States Forest Experiment Station, University of Minnesota, St. Paul.

Vice Chairman—Jack Rothacher, Pacific Northwest Forest and Range Experiment Station, Portland, Ore.

Secretary—Paul Zinke, University of California, Berkeley.

An attendance of approximately 150 persons indicates a continued interest in watershed management, but the editors of the JOURNAL OF FORESTRY are not receiving a proportionate number of papers on this subject. Members of the Division were urged to prepare and submit papers for publication in the JOURNAL.

Members of the Division wish to express their appreciation to Chairman Fletcher for his work during the past year.

JACK ROTHACHER
Secretary

Report of the Division of Forest Economics and Policy

Chairman S. Blair Hutchison called the meeting to order at 8 p.m. September 30 in the Hotel Utah. The first two hours were devoted to a technical program which highlighted the differences in philosophy and methodology among those interested in economics of watershed evaluation. The speakers were H. R. Josephson, Ellis T. Williams, Roy E. Huffman, and E. I. Kotok. About 100 people attended. A number took part in the discussion that followed.

A business meeting followed the technical program, with 15 people attending. Chairman Hutchison called for reports from existing committees.

Ellis Williams reported for the committee assigned at the 1957 meeting to prepare a statement clarifying the difference between the terms "yield tax" and "severance tax." The report was accepted on a motion by Henry Vaux and seconded by M. B. Dickerman. The motion included the stipulation that the statement be submitted to the editor of the JOURNAL OF FORESTRY with the suggestion that it be printed in the Notes section. The motion was adopted.

Carl Newport read a progress report from the committee established at the 1957 meeting to prepare a directory of people working in the field of forest economics. Those present expressed concern over the looseness of the definition of "forest economist" developed by the committee but were unable to suggest a better definition. Mr. Dickerman moved that the group express their concerns to the committee and asked that they exercise their authority in screening qualifications of those requesting to be listed and that the list the committee prepares be submitted to the Executive Committee for final approval before publication. Dean Wohletz seconded the motion. Motion adopted.

Dean Henry Vaux asked for suggestions to be made to the Executive Committee on how next year's meeting should be handled. Those present decided to recommend to the incoming chairman, John Zivnuska, that he consider ways for getting a better attendance at next year's meeting. The group also expressed concern because in this year's meeting one Division was given a whole day without competing meetings, whereas three highly interesting sessions were crowded into that evening. Dean Vaux pointed out the numerous difficulties and considerations involved in scheduling Division sessions during a three-day annual meeting.

Dean Quinney reported for the nominating committee. The committee nominated H. R. Josephson for *vice chairman* and James G. Yoho for *secretary*. Carl Newport moved that the secretary be instructed to cast a unanimous ballot. Dean Vaux seconded the motion. Motion adopted.

Committees reporting:

On the tax question—Ellis T. Williams, R. C. Hall, and A. Z. Nelson.

On progress in developing a directory—Carl Newport (acting secretary), Albert C. Worrell, David B. King, Lee M. James, and George R. Armstrong.

Nominations—Dean Quinney, and M. B. Dickerman.

JOHN H. WIKSTROM
Acting for the Secretary

Report of the Division of Forest Management

The meeting of the Division of Forest Management was held Tuesday morning and afternoon, September 20 in the Hotel Utah.

Russell K. LeBarron, vice chairman, served as chairman of the morning session. J. Whitney Floyd was chairman of the afternoon session. Attendance ranged from 300 to 400 during the meetings.

The speakers were: E. L. Kolbe, J. W. Bongberg, R. D. Moody, R. O Cornelius, D. E. Parker, Steele Barnett, David Tackle, A. L. Roe, Joel L. Frykman, J. W. Kimmey and J. Whitney Floyd.

A nominating committee consisting of Lloyd P. Blackwell, chairman, Charles A. Connaughton, and Frank H. Kaufert presented nominations for Division officers for the coming year consisting of:

Chairman—Russell K. LeBarron.

Vice Chairman—Thomas B. Glazebrook.

Secretary—Frank D. Irving, Jr.

The nominations were approved by the Division.

No resolutions or additional business was presented.

RAYMOND R. MOORE
Secretary

Report of the Division of Forest Recreation

The Division of Forest Recreation met at 8 p.m. in the Hotel Utah, September 30, with over 175 members and guests present. Chairman Felix Koziol opened the meeting.

The first order of business was the election of Division officers for the coming year, wherein the nominating committee proposed advancement of the present vice chairman and secretary to the post of chairman and vice chairman, respectively, and the nomination of a Forest Service official to fill the vacant secretary position. Thus a slate of officers representing the National Park Service, State Parks, and the U. S. Forest Service was proposed and elected by unanimous vote as follows:

Chairman—Frank W. Childs, National Park Service, Omaha, Nebr.

Vice Chairman—William A. Parr, Department of Forests and Parks, Annapolis, Md.

Secretary—Henry A. Harrison, Division of Land Use and Recreation, U. S. Forest Service, Washington, D.C.

The Division program opened with a panel discussion on the question of "How Much Land for Forest Recreation?" with J. Whitney Floyd serving as moderator and Henry A. Harrison, James Tyndall, James P. Gilligan, and Chester J. Olsen as panel members.

This was followed by the presentation of three individual papers. Howard Zahniser discussed "The Case for Wilderness Preservation Legislation," Kenneth Pomeroy "The National Outdoor Recreation Resources Review Ob-

jectives," and Frederick Billings "Public Recreation and Industrial Forestry."

FRANK W. CHILDS
Acting secretary

Report of the Division of Forest-Wildlife Management

The Division of Forest-Wildlife Management held its annual meeting in the Hotel Utah on the evening of September 30. Chairman William L. Webb presided. In attendance were about 100 members and guests.

A total of six papers comprised the program representing the work of Donald R. Deitz, Robert H. Udall, Harold R. Shepherd, and Lee E. Yeager; John L. Buckley; Lowell Adams; Lowell K. Halls and Robert Blair; Harold W. Steinhoff; and Phil D. Goodrum and V. H. Reid.

At the business meeting the following officers were elected for a two-year term:

Chairman—Lansing H. Parker, Bureau on Sports Fisheries & Wildlife, U. S. Fish & Wildlife Service, Washington, D.C.

Vice Chairman—James B. Gilligan, University of California, Berkeley, Calif.

Secretary—Howard A. Miller, Division of Wildlife Management, U. S. Forest Service, Atlanta, Ga.

ODELL JULANDER
Secretary

Report of the Division of Silviculture

The annual meeting of the Division of Silviculture was held during the morning and afternoon of October 1 in the Hotel Utah. Chairman James D. Curtis presided at the morning session and Vice Chairman William H. Cummings during the afternoon. Approximately 175 persons were in attendance.

During the day a total of 11 technical papers were presented by the following authors: Nicholas T. Mirov, Robert M. Echols, Dietrich Muelder, David Bruce, Edward C. Stone and Gilbert H. Schubert, Leon S. Minckler, Carl M. Berntsen, Theodore W. Daniel and G. H. Barnes, George R. Staebler and John H. Rediske, Paul J. Zinke, and Ray D. Berridge and Ted W. Nelson. Participants in a panel discussion of "Chemicals in Silviculture" included Harold R. Offord, Stanley P. Gessel, John H. Rediske, and D. A. Spencer with Theodore W. Daniel as moderator.

In an election by ballot of those in attendance the following officers were elected:

Chairman—William H. Cummings, Forest Research Center, Weyerhaeuser Timber Company, Centralia, Wash.

Vice Chairman—Jesse H. Buell, Yale School of Forestry, New Haven, Conn.

Secretary—Gilbert H. Schubert, California Forest and Range Experiment Station, U. S. Forest Service, Berkeley, Calif.

John F. Shanklin gave the report of the Committee on Natural Areas. The report of the Committee on Tree Improvement was given by R. T. Bingham. (Both reports are published below.)

R. D. ROSEBERRY
Secretary

Report of the Committee on Natural Areas

From time to time in the past we have reminded the Division of Silviculture and the Society at large that the principal purpose and function of the Society's natural areas are to provide a place where research could be conducted. For the most part, on those occasions we have described such opportunities for research in rather generalized terms. These were mostly developed out of the original concept of natural areas and from the Society's definition of them. For the most part, we have stressed their availability as yardsticks against which to compare or evaluate the usefulness or productivity of management measures of one sort or another.

Also from time to time the Committee has made inquiry as to the research use being made of the natural areas. By and large, we have been somewhat disappointed with the reports we have received. Perhaps the Committee has set its sights too high or has expected too much. The reported use made of our natural areas, has, however, left us with a feeling that we should do more to stimulate further research and more study on the areas.

This year the Committee began a system of reporting on the status, condition, and use of the natural areas, which we hope will give us somewhat better information than we have had in the past. The managing agency for each natural area is being requested to report annually any research use made of such areas. If the responses seem to merit, we shall summarize them in our annual report to the Division of Silviculture. We trust, of course, that they will show a steadily increasing use of the natural areas.

As a step toward stimulating greater research use of the natural areas the Committee this year circularized the Section Natural Area Liaison officers for suggested studies that might be conducted. From the replies received it seems likely that the areas will provide in the immediate future more research opportunities for botanists, ecologists, zoologists, etc., than they will for foresters and silviculturists. Most of the suggested study titles are of the sort that would be suitable for theses and dissertations for master and doctorate degrees. A few suggested the use of the areas as standards for comparison with managed areas.

Another thing apparent in the replies received by the Committee is that the job of stimulating research is one for the Sections and the membership as a whole, and more particularly for the members of this Division. Those of you who have associations or contacts with colleges and universities will, we believe, render them a service by suggesting student problems that may be conducted on the natural areas. The Natural Area Committee, two-thirds of whom are desk-bound in Washington, are in very poor position to influence the selection of problems for individual students.

When we circularized the Section liaison officers we had in mind that we might compile a suggested list of studies, by descriptive titles, that might be conducted on each natural area. This we felt would serve as a check list and reminder which we could publish perhaps in other scientific journals and in that way lead students into selections for graduate work. Such a list, however, would be far too long to present to the Division, and perhaps even too long for publication. As examples, however, we do wish to brief the suggestions compiled by J. Roeser, Jr., of the Central Rocky Mountain Station, and by S. Little, Jr., of the Allegheny Section. Roeser has screened out the following:

Fort Niobrara Natural Area—Nebraska.

1. Long-term vegetation trends to answer the question as to whether the ponderosa pine type will extend itself into grassland parks under protection, or whether the perennial grasses will gradually encroach on the pine land.

2. Soil moisture relations in the pine type versus grassland type and mixture of the two.

3. Relative effectiveness of pine as opposed to grass in influencing soil structure, infiltration rate, etc. Which develops the best watershed if protected from all use.

4. Comparison of vegetation trends and soil properties under natural conditions versus used conditions.

Signal Hill Natural Area—Nebraska.

1. Ecology of Sand Hills grasslands.

Upper Pine Creek Natural Area—South Dakota.

1. Ecology of understory ponderosa pine.

2. Lesser vegetation under undisturbed ponderosa pine.

Narraquinnep Natural Area—Colorado.

1. Place of climatic factors and soils factors in determining vegetation types.

2. Brushland ecology — ecological characteristics of the mountain brush community, with consideration of typical flora.

Gothic Natural Area—Colorado.

1. Factors responsible for grassy parks in the Engelmann spruce-subalpine fir forests.

2. Natural history of parks and meadows to determine origin, character, and probable duration of mountain parks and meadows.

Bull Elk Natural Area—Wyoming.

1. Ecology of understory vegetation, under lodgepole pine.

2. Ecology of mountain meadow grasslands.

3. Influence of big game on the vegetation. (A mule deer-elk concentration area. Has never been grazed by domestic animals.)

4. Recovery of lodgepole pine forest after fire.

5. Natural history of parks and meadows to determine origin, character, and probable duration of mountain parks and meadows.

Snowy Range Natural Area—Wyoming.

1. Soils, botany, ecology or undisturbed spruce-fir forests.

Saddle Mountain Natural Area—Colorado.

1. Ecological changes in partially cut stands of spruce-Douglas-fir forests.

2. Ecology of tension zone between grasslands and forest.

3. Timber invasion of grasslands.

4. Ecological differences between topographic situations.

5. Aspen grove succession to determine the factors involved in growth, reproduction, and decline of aspen groves.

For the East, Little has suggested studies on two natural areas. For the Tionesta Natural Area of Pennsylvania he has drawn from and condensed a list prepared some time ago by A. F. Hough, and for the Hutcheson Memorial Forest (Mettler's Woods) of New Jersey he has had suggestions from Murray Buell. Little's suggestions are as follows:

Tionesta Natural Area — Pennsylvania.

1. Present stand composition of the natural area, and post-glacial succession in the vicinity as determined from pollen analyses of nearby bogs.

2. Present composition of vegetation and factors affecting it. This could be subdivided into separate studies of trees, shrubs, herbs, lichens, and mosses, etc. In each study, factors affecting the establishment, growth, longevity, reproduction, and survival of the principal species should be investigated.

3. Soil characteristics of the natural area compared to those of nearby areas of cut-over forest, tilled land, or pasture on the same soil type. This, of course, should include humus, organic-matter content, soil-profile descriptions, chemical and physical analyses, soil fauna and fungi.

4. Studies on the populations and distribution of birds, animals, insects, and fungi in the natural area, as compared to those of nearby areas with similar soils but different cover; and studies of the factors affecting the observed distribution and population of these forms of life.

Hutcheson Memorial Forest Natural Area—New Jersey.

1. Study of alien species — their relative success in competing with native vegetation.

2. Soil survey and comparison with soils of adjacent fields.

3. Drought injury and hurricane damage and their roles in the forest dynamics.

4. Patterns of tree distribution and their relation to past canopy openings.

5. The shrub layer of a stabilized forest area as indicator.

6. Full year cycle of salamander population numbers and habitat.

T. F. Arvola, our liaison officer with the Northern California Section, has offered a suggestion which we think is especially good. He has called attention to the silvical publications currently being issued by various Forest Service regional experiment stations. These are in the form of separate publications on individual timber species and summarize current knowledge. Arvola has suggested that the natural areas provide excellent opportunities for further checking of current information on special ecology and requirements as published in these silvical papers.

Moreover, Edward M. Gaines, our liaison officer with the Southwestern Section, has indicated that detailed vegetation type maps are needed for all areas. With this suggestion we are in complete accord. To my personal knowledge, only the Current River Natural Area in Missouri and the Mettler's Woods Natural Area in New Jersey have such maps. The Current River map was prepared by a committee of the Ozark Section and the Mettler's Woods by the Botany Department of Rutgers University. Others are probably in existence but have not been brought to our attention. We would urge all liaison officers to stress this need.

We would like to reiterate that our natural areas present abundant opportunities for studies which will help to solve natural resource problems. They are specifically intended for this purpose, but to get the research started is going to require some personal interest and stimulation on the part of you and other members of the Society who know where these natural areas are and what studies can be profitably made on them.

In conclusion, we should like to present a brief report of progress during the past year.

Twenty-five natural areas were approved during the past year. Of these 23 are in national parks or national monuments: eight areas, in Arizona, seven areas in California, one area in Colorado, two areas in Maine, one area in Michigan, one area in Texas, one area in Utah, and two areas in Washington. One new area was approved in New Hampshire (Dartmouth College), and one in New York (Pack Demonstration Forest, New York State College of Forestry).

A description of these areas has been mimeographed and copies supplied to our Section liaison officers.

Standards for the guidance of officials administering natural areas were approved during the year. These standards were published in the September issue of the JOURNAL OF FORESTRY, pp. 702-704.

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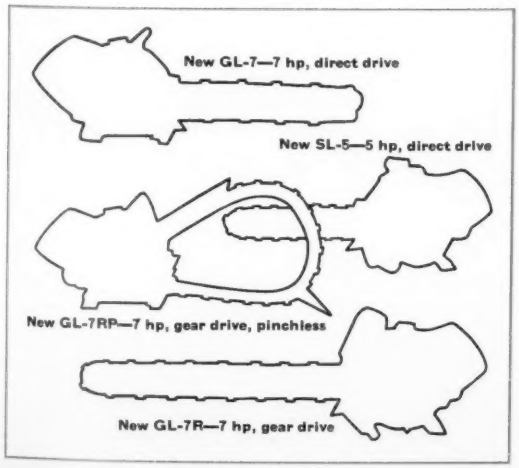

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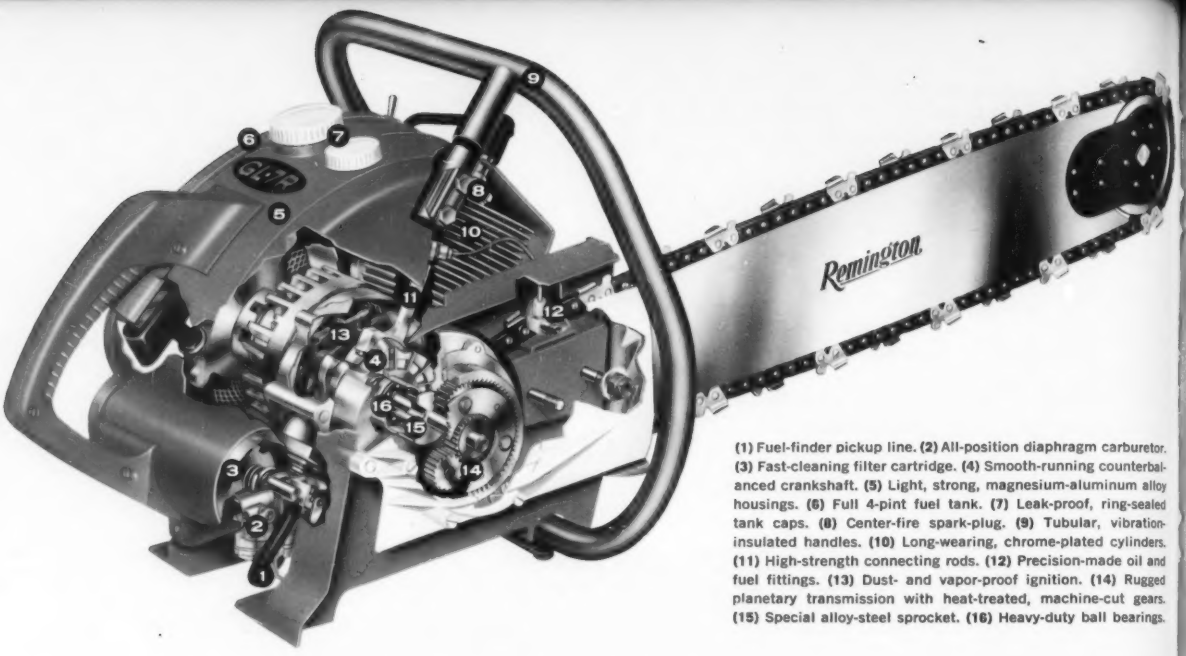

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I should like at this time to express on behalf of the Committee our appreciation for the assistance afforded by the Section liaison officers and especially to: Silas Little, Jr., Allegheny Section; Thornton T. Munger, Columbia River Section; Edward M. Gaines, Southeastern Section; T. F. Arvola, Northern California Section; J. Roeser, Jr., Central Rocky Mountain Section.

I should also like to welcome a new liaison officer—James Dubuar for the New York Section.

Moreover, I should like to extend our appreciation to Edward Munns, who recently took over the administration of Nature Conservancy. He has been most helpful and we now look forward to closer alliance with that organization.

JOHN F. SHANKLIN
Chairman

Report of the Committee on Forest Tree Improvement

The Committee on Forest Tree Improvement has been active since its first meeting in October 1954. It has sponsored several publications including the *Directory of Forest Genetics Research and Education in the United States and Canada* and the annual *Bibliography of Forest Genetic Research*. Both these publications are in line with the policy of the Committee to confine its efforts to activities that facilitate exchange of information between individuals and institutions interested in forest tree improvement.

Dr. Jonathan Wright has edited these two publications. A new bibliography for 1957 is now in press at the Central States Forest Experiment Station and will be released soon.

No current directory has been prepared, and it is recommended that since various tree improvement committee membership and other directories are available none be prepared for the next few years. In addition the committee has in preparation a list of foreign workers in tree improvement. This list will contain the names, addresses, and specialties of workers throughout the world who are actively engaged in tree improvement activities. Completion date is tentatively set for the first of the year.

At the 1957 meeting, considerable discussion was held as to what should be done about naming hybrids and new selections in forest trees. Dr. Elbert Little and Dr. Scott Pauley have agreed to publish the committee's feelings on this, Dr. Little to prepare an article for submission to a taxonomic magazine. Dr. Pauley's article will be prepared for foresters.

For several years the committee has been preparing a glossary of genetic terms for use by foresters. Reviewing Editor E. Bayne Snyder has the latest version of the glossary almost ready for publishing. It will be issued by the Southern Forest Experiment Station, probably as an Occasional Paper, before the end of 1958. Distribution will be handled by the various forest experiment stations.

The Committee on Forest Tree Improvement unanimously recommends that an annual meeting for presentation of research papers in forest genetics be established, beginning at the 1959 annual meeting. The chairman is directed to explore protocol and possibilities of establishing this formal meeting, within the framework of the Division of Silviculture, but not conflicting with Division programming.

R. T. BINGHAM, F. I. RIGHTER,
W. B. CRITCHFIELD, E. B. SNYDER,
R. G. HITT, B. J. ZOBEL,
H. B. KRIEBEL, *Chairman*

Report of the Division of Range Management

The Division of Range Management held an all day meeting October 1 in the Hotel Utah. Division Chairman Elbert H. Reid presided.

The morning session was devoted to the theme "Grazing in Multiple Use of Forest and Range Lands." Five technical papers were presented by William D. Hurst, Arthur D. Smith, Lowell K. Halls, Reino R. Sarlin, and L. D. Love.

During the afternoon four technical papers were presented under the theme of "Manipulation of Range Vegetation." Authors included Hurlon C. Ray, R. M. DeNio, A. Perry Plummer, and Harold Weaver.

At the business meeting of the Division a slate of candidates for office for 1959 was selected.

Nominations were as follows: *Chairman,* Harold H. Biswell and Joe A. Wagner; *Vice Chairman,* R. M. DeNio and Robert S. Rummel; *Secretary,* Paul C. Simmon and Lowell K. Halls.

Voting [was to be] by mail ballots, to be distributed to the Division members prior to November 15.

ELBERT H. REID
Chairman

Council's Column

The Foundation of the Society's Standards

Foresters are currently keenly aware of the necessity to enhance the stature and the competence of the profession. The concern over licensing, rising standards of accreditation for professional schools, the current Society study of education in forestry and related fields, reemphasis on research and the training necessary for it, and the thinking of thousands of individual foresters expressed in informal discussions all suggest that this is one of the key issues among members of the profession today.

There are at least two reasons why the Society should currently be concerned with standards. First, it is clear that land management problems in the years ahead will require judgments and techniques of much higher order than those we have needed in the past. The values which society entrusts to the profession are growing in significance with each passing year. Second, the profession is exposed to the hazards common to all organisms during periods of very rapid growth. During the last 12 years membership in the Society has risen by 140 percent. Under such circumstances it would not be surprising if some of the Societal muscles needed strengthening. Most foresters recognize the challange which these trends pose and are acting to meet that challenge. This is a significant sign of professional maturity.

The formidable tasks of the future and the spectacular growth of the recent past thus combine to emphasize the importance of the current scrutiny of our professional standards. They lend renewed importance to the first of the Society's objectives: "to represent, advance, and protect the interests and standards of the profession of forestry."

One of the primary devices which the Society uses to achieve this objective of enhanced professional standards is its own system of admission and advancement to each of the several membership grades. The basic yardsticks for such admissions and advancements are prescribed by the Society's Bylaws. The *judging* of individual applicants in relation to these standards is done by two different means. For certain grades of membership the standards prescribed by the Bylaws rest largely on profes-

sional education. These standards are applied through the judgment of those schools of forestry designated by the Committee for the Advancement of Forestry Education as accredited. For the remaining grades, judgments are made through review of each case by endorsers, Sectional officials, and the Council Committee on Membership. Because this latter procedure may involve any voting member of the Society, its operation should be of direct concern to all.

When the Society was relatively small, Section Membership Committees, and even the Council Committee, could be expected to have personal acquaintance with a large proportion of the applicants whose qualifications they were called upon to judge. But in a Society of 12,000 men this is clearly no longer possible. Therefore, in a majority of instances today the source of the most significant information and of the best informed professional judgment as to qualification lies with the three members who serve as endorsers for a particular application. Thus, membership standards now depend very heavily on the adequacy of the information provided by endorsers and on the judgments which those endorsers make.

Just as the capacity of a barrel is limited by the shortest stave, the professional standards of the Society tend toward the level of the *least* qualified member in each of the several grades. Under these circumstances, it should be apparent that the key to Society membership standards rests with the individual endorser. Endorsement of a membership application is thus one of the most important professional duties which a member of the Society performs.

In the past, this vital role of the endorser may have been obscured. At one time, because of a high correlation between membership grade and dues structure, some members looked on advancement in grade as largely a matter of raising more revenue for the Society. Regardless of whether or not this interpretation was ever correct, the basis for such a view no longer exists. Society income is not now influenced in marked degree by considerations of membership grade. Admission and advancement are based solely on qualifications and are completely divorced from fiscal considerations.

Additional confusion may arise because endorsements are solicited from among those to whom the applicant is well known. It is thus easy to misconstrue the act of endorsement as a gesture of friendship. Obviously, endorsements made on such a basis could be fatal for the maintenance of professional standards in any grade of membership.

A man's professional associates are surely the best judges of his qualifications. But if such judgments are to serve the Society's goal of maintaining standards, they must be objective. If they are otherwise in even a few instances, the standards of the Society and its whole professional stature are menaced.

Thus, if existing membership procedures are to remain adequate for the Society's needs, every member who serves as an endorser must clearly recognize three obligations: (1) To be thoroughly familiar with the standards for membership grades as set forth in the Bylaws and supporting interpretations. (These are fully and clearly set forth in the JOURNAL, June 1958, p. 441 *et seq.*). (2) To exercise unbiased professional judgment in evaluating the applicant's qualifications. (3) To support the judgment by entering on the endorsement form all the relevant facts which are available.

Effective discharge of these obligations by all of us is, I think, of highest importance to the future of our profession. And the Society's success in advancing professional standards will largely depend on the performance of each member who assumes the responsibility of endorsing a colleague.

HENRY J. VAUX

Society Division and Section Officers, Committees and Representatives

Division Officers 1959

Division of Education

Peter W. Fletcher, chairman; School of Forestry, University of Missouri, Columbia, Mo.

W. C. Bramble, vice chairman; Department of Forestry and Conservation, Purdue University, Lafayette, Ind.

John Carow, secretary; School of Natural Resources, University of Michigan, Ann Arbor, Mich.

Division of Economics and Policy

John Zivnuska, chairman; 243 Walter Mulford Hall, University of California, Berkeley 4, Calif.

H. R. Josephson, vice chairman; Forest Service, U. S. Dept. of Agriculture, Washington 25, D. C.

James G. Yoho, secretary; School of Forestry, Duke University, Durham, N. C.

Division of Forest Management

Russell K. LeBarron, chairman; California Forest and Range Experiment Station, P. O. Box 245, Berkeley 1, Calif.

Thomas B. Glazebrook, vice chairman; 2945 S. Columbus St., Arlington 6, Va.

Frank D. Irving, Jr., secretary; 1745 Tatum St., St. Paul 13, Minn.

Division of Forest Products

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Central States Section Holds Annual Meeting

The Central States Section of the SAF held its 36th annual meeting at the Memorial Center at Purdue University, Lafayette, Ind., October 9-10. About 125 members and guests were in attendance.

Section Chairman C. I. Miller presided at the business meeting on the

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evening of the 9th and at the technical sessions on the following day. A ballot election of the new Section vice chairman resulted in the assumption of this office by H. F. Siemert. Secretary-Treasurer John C. Callahan was re-elected.

Three panel discussions on the morning of the 10th dealt with the subjects "Farm Forestry—Where Do We Go From Here?," "Is Timber Price Reporting Desirable?" and "How Can The Number of Journal Articles From Field Foresters Be Increased?" Lively floor discussions followed each panel.

The afternoon was devoted to a tour of the National Homes Corporation, one of the largest builders of prefabricated housing, and to a review of research work underway at Purdue on building structures.

SAF President George A. Garratt delivered the principal address at the evening's annual banquet on the subject of "The Forestry Profession and the Future."

Incoming Section Chairman Robert R. Paton, Ohio Forestry Association, was presented with the Section gavel by outgoing chairman Miller.

William A. Dayton (1885-1958)

William A. Dayton, noted plant scientist, died in Arlington, Va., from a heart attack on October 20. He had served as collaborator with the U. S. Forest Service since his retirement in 1955 after 45 years of service.

Mr. Dayton was born December 14, 1885, in New York City and grew up at Tarrytown, N. Y.

After earning his BA (1905) and MA (1908) from Williams College, Mr. Dayton entered the Forest Service in 1910 as a plant ecologist. For the next three years he was assigned to field work in Arizona, Oregon, and California. In 1914 he was placed in charge of range forage investigations in the Washington office where be served until his retirement. In 1942 he was made chief of the Division of Dendrology & Range Forage Investigations.

Mr. Dayton won wide recognition as an international authority for his original and outstanding research and leadership in taxonomy, ecology, and economic value of forest and range plants. He pioneered in range forage investigations and did more than any other man to systematize the nomenclature of range forage plants.

In 1911, about a year after joining the Forest Service, he started and was subsequently responsible for building up the Forest Service Range Plant Herbarium which now consists of more than 120,000 specimens. His range

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work resulted in the preparation of two outstanding publications of the U. S. Department of Agriculture, *Important Western Browse Plants* (1931) and *Range Plant Handbook* (1937). He was author of more than 140 published articles and reports.

In 1940, Mr. Dayton was appointed U. S. Department of Agriculture representative on the Editorial Committee of *Standardized Plant Names,* and was co-author of this book, containing some 90,000 entries, published in January 1942. For this work he was awarded a gold medal by the Massachusetts Horticultural Society.

In 1943, he was appointed a member of the Costa Rica Forest Survey party. This survey party discovered the famous Copey oak forest—perhaps the largest oak and the largest oak forest in the world.

He was delegate to the UNESCO International Conference on the Protection of Nature at Lake Success, N. Y., in 1949, a delegate to the 7th International Botanical Congress at Stockholm, Sweden, in 1950, and served as chairman of Sec. D., Ecology of Grasslands, 6th International Grassland Congress, State College, Pa., in 1952.

Mr. Dayton was a Fellow of the American Association for the Advancement of Science and a member of 20 other scientific societies, including three international ones. He was vice president of the Washington Academy of Sciences and served as president of the Botanical and Biological Societies of Washington and as chairman of the Washington Section of the Society of American Foresters. He represented the Ecological Society of America on the Governing Board of the American Institute of Biological Sciences. He was chairman of the Forest Service Tree and Range Plant Name Committee and of the Society of American Foresters Committee on Tree Nomenclature, and served on Department of Agriculture nomenclature committees.

In June 1955 Mr. Dayton was given the Department of Agriculture Distinguished Service Award "for conducting and providing leadership in carrying out important research on the taxonomy and ecology of grasses, browse plants, trees and related forest and range vegetation." His enviable reputation as a botanist and ecologist among plant scientists was worldwide.

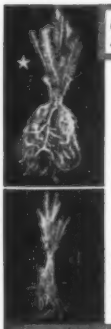
Elmer E. Matson (1904-1958)

Elmer E. Matson, chief of forest utilization research at the Pacific Northwest Forest and Range Experiment Station, U. S. Forest Service, died October 12 after an illness of several months. He was 53 years old.

His career in public forestry began in 1933 with the Civilian Conservation Corps. From 1934 to 1942 he worked on national forests in Michigan, serving briefly in 1939 on the New England Timber Salvage project. During World War II he was assigned for 3 years to the forest products division in the Washington, D. C., headquarters of the Forest Service, where his work dealt largely with military requirements for forest products supplies.

He was transferred to the Pacific Northwest Station in Portland in 1945, working first in the Experiment Station's forest utilization research division and later in forest management research. In 1951 he was placed in charge of forest utilization research.

Born in Hartford, Wash., October 18, 1904, he received a degree in forestry from the University of Washington in 1932



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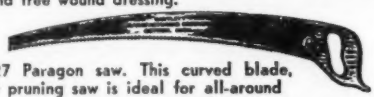

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SECTION BOX SCORE 1958 MEMBERSHIP

	Applications Received[1] December 1958	Total 1957	Total 1958
Allegheny	11	68	64
Appalachian	69	71	94
Central Rocky Mountain	4	24	19
Central States	24	30	44
Columbia River	1	55	54
Gulf States	39	84	86
Inland Empire	4	21	21
Intermountain	0	6	33
Kentucky-Tennessee	0	8	3
New England	7	62	52
New York	30	37	55
Northern California	1	39	12
Northern Rocky Mountain	1	49	26
Ozark	21	92	45
Puget Sound	7	61	55
Southeastern	58	132	163
Southern California	0	3	0
Southwestern	0	7	1
Upper-Mississippi Valley	10	69	84
Washington	0	10	1
Wisconsin-Michigan	40	84	114
Totals	327	1,012	1,026

[1]Student, Junior, Affiliate, Associate (Initial) grades only.

SCHOOL BOX SCORE 1958 MEMBERSHIP

	Student Applications Received December 1958	Total 1957	Total 1958
Alabama Polytechnic Institute	0	19	22
University of California	1	30	57
Colorado State University	4	19	19
Duke University	20	13	23
University of Florida	3	6	25
University of Georgia	55	86	101
University of Idaho	4	19	18
Iowa State College	9	35	36
Louisiana Polytechnic Institute	22	18	5
Louisiana State University	15	41	44
University of Maine	6	31	28
University of Massachusetts	0	10	4
Michigan State College of Mining & Technology	0	29	5
Michigan State University	31	24	61
University of Michigan	8	14	26
University of Minnesota	1	28	33
University of Missouri	21	62	28
Montana State University	0	45	17
State University of New York	29	25	45
North Carolina State College	48	36	49
Oregon State College	0	29	30
Pennsylvania State University	4	32	28
Purdue University	24	18	42
Utah State University	0	5	24
University of Washington	7	27	34
W. Virginia University	7	19	26
Yale University	0	7	6
Totals	319	727	836

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Membership Applications and Advancements

Proposals for admission, advancement, and reinstatements received in the Society office during the month of October are listed below.

Action on the eligibility of those proposed for membership as listed below will be taken by the Council as of January 1959.

Communications from the voting members regarding the membership eligibility of these persons should be received in the Society office prior to that date.

Allegheny Section

Student Grade

PENNSYLVANIA STATE UNIVERSITY

Harris, B. D. — Lonberger, T. E.
Henry, R. A. — Peterson, A. M.

West Virginia University

Bowman, B. A. — Mace, A. C.
Dickens, B. H. — Patton, D. R.
Gamber, S. M. — Tice, P. F.

Wolf, J. W.

Junior Grade
Students Eligible for Automatic Advancement

PENNSYLVANIA STATE UNIVERSITY

Durdan, J. H. — Ruppert, C. V.

Appalachian Section

Student Grade

DUKE UNIVERSITY

Beamer, H. L. — Moyers, G. B.
Beck, D. E. — Roberts, B. R.
Bodie, W. C. — Rogers, J. D.
Davis, M. L. — Schacht, W. P.
Dutrow, G. J. — Singer, S. R.
French, T. B. — Stone, J. M.
Fritz, G. P. — Swisher, K. J.
Harrison, W. L. — Torrey, W. F.
Judy, C. P. — Wilkinson, T. G.
Morgan, R. L. — Will, N. P.

NORTH CAROLINA STATE COLLEGE

Banner, W. T. — Hunter, T. G.
Bass, J. L. — Johnson, H. M.
Batten, V. F. — Lawrence, L. K.
Belt, G. H. — Leach, R. E.
Bost, R. M. — Mattocks, R. L.
Brake, R. F. — McMinn, J. W.
Bramlett, D. L. — Moore, C. F.
Breeman, L. G. — Nichols, L. A.
Briggs, C. S. — Potter, C. L.
Brinkley, C. W. — Pecythe, H. W.
Carrigan, W. C. — Roberds, J. H.
Cawthorne, W. G. — Rose, P. C.
Collier, T. W. — Scheld, H. W.
Doggette, C. A. — Scott, J. M.
Eskridge, C. D. — Seagle, M. E.
Freeman, H. B. — Selden, C. W.
Gaines, G. L. — Sherwood, R. W.
Griffin, E. V. — Sutton, D. A.
Hagwood, R. L. — Sykes, P. W.
Hampton, G. — Taylor, L. R.
Hasenoehrl, F. S. — Thompson, E. F.
Helms, G. A. — Vinson, J. B.
Henderson, K. D. — Wallinger, R. S.
Howell, J. W. — Wiseman, J. W.

Member Grade

Fox, R. C., ass't prof., Clemson Agric. College, Clemson, S. C.; Mich. State, BSF 1948, MF 1949 (Junior 1955).

Affiliate Grade

Ohlson, E., dist. forester, Va. Div. of Forestry, Abingdon, Va.

Central Rocky Mountain Section

Student Grade

COLORADO STATE UNIVERSITY

Beaubien, R. D. — Davies, D. J.
Brown, G. W. — Wolfe, J. A.

Junior Grade

Wright, A. C., ass't forest supv., Gunnison Natl. Forest, Gunnison, Colo. (Reinstatement).

Member Grade

Brown, G. L., forest ranger, Brush Creek Ranger Dist., Saratoga, Wyo. (Reinstatement).

Central States Section

Student Grade

PURDUE UNIVERSITY

Barratt, J. W. — Petty, P. E.
Beineke, W. F. — Phillips, L. N.
Blance, A. J. — Reid, P. O.
Cleaver, R. L. — Reid, R. G.
Coil, J. E. — Rogers, J. H.
Dierking, D. W. — Shanklin, J. R.
Flack, J. R. — Thomas, W. A.
Fouch, N. M. — Torrence, D. A.
Hallman, R. G. — Van Putten, G. N.
Holwager, J. O. — Weadick, M. E.
Huddlestun, J. R. — Williams, B. W.
McCurdy, D. R. — Wurstner, R. D.

Columbia River Section

Junior Grade

Ratliff, D. E., unit forester, Ore. State Board of Forestry, Salem, Ore.; Univ. of Idaho, BSF 1940.

Students Eligible for Automatic Advancement

OREGON STATE COLLEGE

Hoebel, W. G. — Ingram, E. F.
Mays, L. K.

Gulf States Section

Student Grade

LOUISIANA POLYTECHNIC INSTITUTE

Anthony, J. M. — McGrew, H. E.
Carruth, T. J. — McKissack, W. D.
Colvin, T. A. — Reitzell, R. V.
Comeaux, G. D. — Rockett, K. W.
Dark, W. E. — Shows, R. D.

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Elkin, M. D.
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Gills, B. L.
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Istre, H. W.
Kay, D. R.
Slayton, S. H.
Squyres, R. W.
Stagg, C. J.
Stroud, R. H.
Tolar, A. M.
Westbrook, R. F.

LOUISIANA STATE UNIVERSITY

Caillouet, C. W.
Echols, H. W.
Felps, J. V.
Heard, L. P.
Jones, H. L.
Kile, G. W.
Kinsley, L. L.
Kromer, J. A.
Miley, L. E.
Monroe, J. F.
Palmer, W. J.
Rumsey, R. L.
Shiremen, J. V.
Smith, A. B.
Squires, J. W.

Member Grade

Miller, C. H., field ass't., International Paper Co., Carthage, Miss.; La. State, BSF 1950 (Junior 1951).

Nelson, J. A., dist. supv., International Paper Co., DeRidder, La.; Colo. State, BSF 1950 (Junior 1952).

West, J. T., dist. forester, Masonite Corp., Laurel, Miss.; Univ. of Fla., BSF 1950 (Junior 1955).

Affiliate Grade

McReynolds, R. D., research forester, Southern Forest Expt. Sta., Oxford, Miss.

Fisher, L. L., woodland cons., Soil Cons. Service, Mt. Pleasant, Tex.

Inland Empire Section

Student Grade

UNIVERSITY OF IDAHO

Brandt, J. C.
Garrett, A. E.
McElwain, K. F.
Sonnichson, R. C.

Junior Grade

Erickson, V. L., forester, St. Joe Nat'l. Forest, St. Maries, Idaho (Reinstatement).

Students Eligible for Automatic Advancement

UNIVERSITY OF IDAHO

Hodgins, J. R.
Hronek, B. B.
Mendich, P. L.
Osborn, F. G.
Roberts, R. B.
Schuldt, A. T.
Zwirtz, R. J.

Member Grade

Meckel, F. A., forester, farmer, self employed, Coeur d'Alene, Idaho; Univ. of Calif., BSF 1932 (Reinstatement).

Intermountain Section

Junior Grade

King, R. W., staff timberman, Toiyabe Natl. Forest, Reno, Nev. (Reinstatement).

Varney, R. M., forester, Bur. of Land Mgmt., Las Vegas, Nev. (Reinstatement).

Students Eligible for Automatic Advancement

UTAH STATE UNIVERSITY

Dempsey, J. M.
Gurr, G. R.
Hassell, M. J.
Hickman, J. L.
Hooper, D. H.
Johnson, W. J.
Kennedy, J. P.
Kyselka, J. V.
Nebeker, D. T.
Smith, R. S.

New England Section

Student Grade

UNIVERSITY OF MAINE

Bauer, R. E.
Cotreau, P. A.
Chauvey, D. A.
Collins, B. C.
Holmsen, R. H.
Van Sickler, R. T.

Junior Grade

Brandt, R. W., plant pathologist, USFS, New Haven, Conn.; Mich State BS (General Forestry) 1950, BSF 1951, MS (Plant Pathology) 1955, N.Y. State College, PhD (Forestry Pathology) 1958.

New York Section

Student Grade

STATE UNIVERSITY OF NEW YORK

Barth, R. A.
Brooks, C. F.
Bulsiewicz, F. W.
Butt, J. P.
Canham, H. O.
Defendorf, P. E.
Field, E. A.
Frommer, C. H.
Hotopp, K. R.
Hutchinson, R. W.
Karsch, E. A.
Landino, J. L.
Laufer, K. S.
Malchow, R. H.
Manson, J. N.
McConaughty, D. B.
Milanese, R. P.
Miller, A. W.
Newman, L. C.
Peaslee, A.
Raushi, R. G.
Shirley, F. C.
Smith, R. E.
Sundt, A. A.
Thornton, L. H.
Torgersen, T. R.
Ulbrich, R. A.
Watterston, K. G.
Winieski, J. A.

Junior Grade

Williams, R. H., forester, N.Y. State Cons. Dept., Oneonta, N. Y.; Utah State, BSF 1950.

Northern California Section

Student Grade

UNIVERSITY OF CALIFORNIA

Vasey, R. B.

Junior Grade

Friend, R. A., USFS, Stonyford, Calif. (Reinstatement).

Student Eligible for Automatic Advancement

UNIVERSITY OF MICHIGAN

McCormick, R. J.

Northern Rocky Mountain Section

Junior Grade

Students Eligible for Automatic Advancement

Gibson, R. L.
Lund, R. C.

Affiliate Grade

Sagmuller, C. J., tbr. mgmt. asst., Mont. State Forestry Dept., Missoula, Mont.

Ozark Section

Student Grade

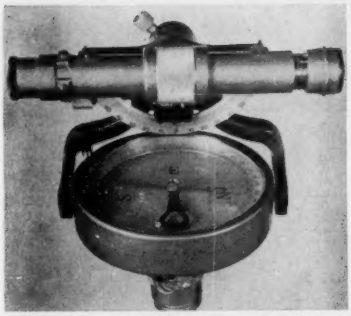
UNIVERSITY OF MISSOURI

Barney, J. M.
Bergman, F.
Carr, J. L.
Cockrel, R. G.
Culbertson, D. H.
Ewing, F. E.
Gaines, V. H.
Grigery, T. E.
Hart, G. A.
Johnsey, R. L.
Joiner, G. W.
Jordan, T. E.
Kilbury, R. R.
Meredith, T. H.
Parnell, R.
Rast, E. D.
Rice, H. W.
Rogge, F. C.
Runge, N. W.
Taylor, L. A.
Whitaker, E. C.

Student Eligible for Automatic Advancement

UNIVERSITY OF MISSOURI

LaVal, M. R.



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Puget Sound Section

Student Grade

UNIVERSITY OF WASHINGTON

Brocard, N. G. — Long, R. L.
Foran, D. O. — Sabo, J. T.
Furseth, B. O. — Schunette, A. W.

Scott, C. T.

Junior Grade

Rush, D. E., forest inventory asst., Weyerhaeuser Tbr. Co., Tacoma, Wash. (Reinstatement).

Student Eligible for Automatic Advancement

UNIVERSITY OF WASHINGTON

Fisk, M. W.

Southeastern Section

Student Grade

UNIVERSITY OF FLORIDA

Henderson, W. B. — Spence, E. A.
Wilder, P. D.

UNIVERSITY OF GEORGIA

Allgritton, G. A. — Hawk, J. S.
Barnhart, J. L. — Helton, C. S.
Beatty, C. W. — Hinson, W. B.
Bennett, E. H. — Johnson, J. T.
Bowling, M. L. — Kelly, R. E.
Brack, C. E. — Kendrick, H. C.
Brantley, F. D. — Landrith, H. W.
Bryan, P. W. — Lovin, M. H.
Chesser, J. L. — Moore, J. F.
Cobb, J. B. — Nease, E. T.
Conger, J. T. — Nunn, R. C.
Crowley, C. A. — Oettmeier, W. M.
Cunningham, E. R. — Parker, F. O.
DeLoach, D. R. — Paul, J. T.
Dockery, E. — Pope, G. E.
Durham, W. G. — Purdom, D. T.
Eadie, J. R. — Reese, R. W.
Eidson, T. C. — Roush, D. A.
Flanders, G. W. — Russell, R. D.
Gardner, P. E. — Sherrod, J. C.
Garrett, E. M. — Smith, V. T.
Gay, R. E. — Staten, G. F.
Graham, R. W. — Stephens, C. R.
Haddock, W. H. — Thomas, H. E.
Hambrick, H. T. — Turk, G. B.
Harkins, L. H. — West, A. W.
Harper, R. K. — White, J. F.
Woosley, D. L.

Junior Grade

Students Eligible for Automatic Advancement

UNIVERSITY OF GEORGIA

Brant, B. B. — Marsh, J. D.
Curry, F. K. — Parrish, W. F.
Helm, W. R. — Williams, H. G.

Member Grade

Buettner, R. T., forester, Buettner Bros. Lumber Co., Inc., Cullman, Ala.; API, BSF 1953 (Junior 1953).

Milton, W. W., sr. forester, Ga. Kraft Co., Lumpkin, Ga.; Univ. of Fla., BSF 1955 (Junior 1955).

Parrish, K. L., dist. forester, Ga. Kraft Co., Lumpkin, Ga.; Univ. of Ga., BSF 1955 (Junior 1955).

Taylor, G. L., forester, St. Regis Paper Co., Jacksonville, Fla.; Univ. of Fla., BSF 1950 (Junior 1954).

Upper Mississippi Valley Section

Student Grade

IOWA STATE COLLEGE

Franklin, R. P. — Rogers, D. D.
Halbleib, D. W. — Swanson, W. S.
Madsen, A. R. — Walk, F. O.
Pfister, R. D. — Warrick, C. D.
Younkin, M. C.

UNIVERSITY OF MINNESOTA

Frissell, S. S.

Junior Grade

Students Eligible for Automatic Advancement

IOWA STATE COLLEGE

Holthus, D. C. — Muntz, H. D.
Houtchens, L. F. — Rasmuson, D. A.
Suhr, W. E.

Wisconsin-Michigan Section

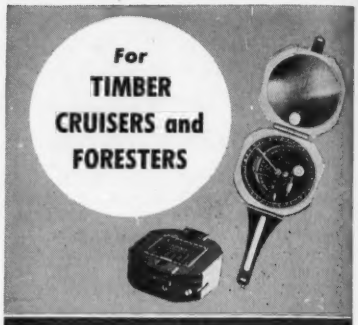
Student Grade

MICHIGAN STATE UNIVERSITY

Baier, G. K. — Mahn, C. A.
Bennett, B. L. — Manthy, R. S.
Dickerson, B. P. — Marlowe, D. E.
Dishong, D. S. — Massello, J. W.
Drahn, R. L. — Messner, R. M.
Eidenberger, R. L. — Mittig, W. R.
Estola, J. D. — Moore, M. D.
Fladseth, F. C. — Moss, R. G.
Fowler, A. L. — Plevel, S. R.
Fowler, G. S. — Riddle, C. D.
Frame, J. R. — Ross, L. L.
Harmsen, L. W. — Sanders, R. C.
Kastner, R. E. — Stewart, J. L.
Konkol, D. W. — Tussing, R. L.
Lightfoot, B. E. — Williams, W. A.
Winkler, F. J.

UNIVERSITY OF MICHIGAN

Maser, J. D. — Gregg, J. B.
Vosburgh, J. C. — Babas, P. A.
Olmsted, E. W. — Braidwood, J. C.
Ohman, C. P. — Wheeland, H. A.



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Junior Grade

Kozlowski, T. T., professor, Dept. of Forestry & Wildlife Mgmt., Univ. of Wis., Madison, Wis. (Reinstatement).

Miller, T. R., field work supv., Northern Tree Co., Petoskey, Mich. (Reinstatement).

Students Eligible for Automatic Advancement

MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

Godlevske, H. L.

MICHIGAN STATE UNIVERSITY

Best, J. W. — Gammon, A. D.

Member Grade

Becker, R. J., forester, Nat'l. Container Corp., Tomahawk, Wis.; Univ. of Mich., BSF 1952 (Junior 1953).

Rugg, R. F., asst. dist. forester, Black Lake State Forest, Onaway, Mich.; Mich. State, BSF 1954 (Junior 1954).

Tucker, T. R., land appraiser, Mich. Dept. of Cons., Lansing, Mich.; Mich. State, BSF 1941 (Junior 1952).

Affiliate Grade

Johnson, J. A., forester, Ford Forestry Center, L'Anse, Mich.

No Section

Corresponding Grade

Nastor, M. N., sr. forestry research scientist, U. S. Dept. of Agric., Washington, D. C.

Siapno, I. B., forestry supv., Dept. of Agric. & Natural Resources, Manila, Philippines.

Forestry News

AT THE MEETING of the American Forestry Association Karl T. Frederick (*left*), director of the Theodore Roosevelt Association, presents a painting of President Roosevelt to Don P. Johnston, AFA president.

Forestry Association Holds 83rd Annual Meeting

With an attendance of 475, the American Forestry Association's annual meeting, held in Tucson, Ariz., October 27-30, was one of the largest in the organization's 83-year history.

Featuring "Water, Forests and People" as its meeting theme, the Association's indoor sessions and field trips were directed toward watersheds and their management.

At the opening session, at which President Don P. Johnston presided, the principal address was given by R. E. McArdle, chief of the U. S. Forest Service. A pageant, "Salute to the Forest," was presented under the direction of William Bergoffen of the Forest Service.

Philatelic history was made with the presentation of the 4-cent Forest Conservation Commemorative Postage Stamp which went on sale during the meeting beginning with October 27, the first day of issue.

Field trips were taken to the Coronado National Forest under the guidance of Fred H. Kennedy, regional forester, and Norman P. Weeden, supervisor; and to the Arizona-Sonora Desert Museum, where Arthur Newton Pack, president of the Charles Lathrop Pack Forestry Foundation, presented a recently completed watershed exposition to the museum.

Among the recipients of conservation awards, annually presented by the association, were E. C. Hirst of Concord, N. H., who received the award for contributions to conservation in commerce and industry; to R. E. McArdle for public service; and to Arthur W. Sampson of Berkeley, Calif. for professional education.

At the association's annual dinner Tom Gill served as toastmaster. The principal address was given by Luis Quintanilla, ambassador for Mexico to the Organization of American States.

Foresters in Congress

William H. Meyer of West Rupert, Vt., executive director of the Vermont Forest and Farmland Foundation, Inc., was elected to the Congress of the United States on November 4.

Mr. Meyer, a Democrat, is a forestry graduate of the Pennsylvania State University, class of 1936. He will occupy the state's single seat in the House of Representatives.

Walter M. Mumma, Republican of Harrisburg, Pa., of Pennsylvania's 16th Congressional District, was reelected. He is a 1911 graduate of the old Pennsylvania State Forest Academy at Mont Alto.

Canadian Forestry Institute Celebrates Semicentennial

With nearly 500 members and guests in attendance, the Canadian Institute of Forestry held its fiftieth anniversary meeting at Fredericton, New Brunswick, October 5-9.

C. W. I. Creighton, president of the institute, presided at the opening general session, J. W. B. Sisam, past

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president and dean of the Faculty of Forestry at the University of Toronto, presented a paper on the historical highlights of CIF.

Henry Clepper brought greetings from the Society of American Foresters. (The text of the greetings as approved by the Council appears on page 921).

J.D.B. Harrison gave the theme address, "Forestry Commissions in Canada." Dr. Harrison is director of the Forestry Branch, Department of Northern Affairs and Natural Resources, Ottawa.

At the institute's annual dinner, held in the Lord Beaverbrook Hotel, on October 7, the speaker was Maxwell MacLaggan, chairman of the Woodlands Section, Canadian Pulp and Paper Association.

The principal address at the CIF luncheon on October 8 was Fred A. Harrison, vice president and manager of woodlands for Canadian International Paper Company. Most of the meeting was given over to technical sessions on fire protection, reforestation, and reports on the several forestry commissions.

In 1959 the institute's annual meeting will be held at Prince George, B. C. during the week of October 5.

State Foresters Elect Officers

New officers for the Association of State Foresters for 1959 were elected in the association's annual meeting held in Lake Hope, Ohio, October 9, 10, and 11.

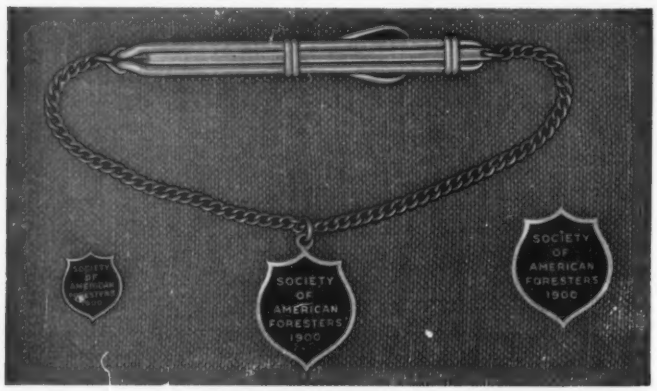
They are as follows: president, Fred H. Claridge, state forester, Department of Conservation and Development, Raleigh, N. C.; vice president, L. T. Webster, supervisor of natural resources, Olympia, Wash.; secretary-treasurer, James E. Mixon, state forester, Louisiana Forestry Commission, Baton Rouge, La.; executive committee, John A. Beale, state forester, Wisconsin Conservation Department, Madison, Wis.; and hold over committee member, J. Whitney Floyd, immediate past president, chief forester, Board of Forestry and Fire Control, College of Forestry, Logan, Utah.

New Brunswick Faculty of Forestry Observes Fiftieth Year

Special programs marked the fiftieth anniversary of the Faculty of Forestry, University of New Brunswick, at Fredericton, New Brunswick, October 6-11, 1958. Celebration of the event coincided with the Golden Jubilee Convention of the Canadian Institute of Forestry, making possible joint meetings.

The Golden Jubilee program of the University of New Brunswick Faculty of Forestry included, in addition to joint meetings with the Canadian Institute of Forestry, field trips to the University forest, tours of the University, a Convocation, and several social gatherings. At the Convocation honorary degrees were conferred on several persons including The Right Honourable John G. Diefenbaker, P. C.; Louis-Zéphirin Rousseau, Faculty of Forestry, Lavall University; and John D. B. Harrison, director, Forestry Branch, Department of Northern Affairs and National Resources. The Right Honourable Lord Beaverbrook, P. C., introduced Prime Minister Diefenbaker who delivered the Convocation address.

In October 1908, Chancellor C. C. Jones informed the University Senate of the Government's intention to es-



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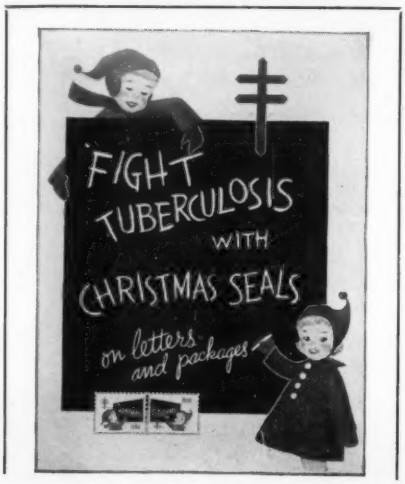

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THE PRESERVATION OF HUMAN WELFARE HIS PURPOSE.
IN RECOGNITION OF THAT MAN AND HIS WORK,
THIS PLAQUE IS GRATEFULLY INSCRIBED AND PLACED HERE
BY THE
PENNSYLVANIA FORESTRY ASSOCIATION
OCT. 11, 1958

PENNSYLVANIA Governor Leader (kneeling), Lloyd Partain, and Maurice K. Goddard inspect plaque at dedication of Gifford Pinchot State Park.
Photo Pa. Dept. Commerce

tablish a chair of forestry at the University of New Brunswick, Dr. Robert B. Miller, a graduate of Wabash College (BS, 1896; MA, 1906) and Yale University (MF, 1908), was appointed the first professor of forestry. It is interesting to note that one of the main reasons for establishment of a forestry school at the University of New Brunswick was the need for men "trained in theoretical and practical knowledge to conserve our forest wealth."

During the past half-century, 738 foresters have been graduated, of whom 700 are living. They are practicing in every province in Canada and in the United States, England, Mexico, the British West Indies, and New Zealand. This fall undergraduate foresters in residence numbered 160, and graduate students in forestry, 6. Of the more than 700 graduates, 105 studied for higher degrees in Canadian, American, and foreign universities.

J. Miles Gibson, dean of the Faculty of Forestry, has served in that position since 1929.

Dedication of Plaque at Gifford Pinchot State Park

A bronze plaque set in a huge native boulder was dedicated in memory of Gifford Pinchot at the newly acquired Gifford Pinchot State Park in York County, Pa., on October 11.

The ceremony was attended by Governor George M. Leader and several members of his cabinet and of the legislature. Maurice K. Goddard, secretary of the Department of Forests and Waters, the agency that will administer the park, paid tribute to Mr. Pinchot's leadership and manifold contributions to the conservation of natural resources.

The plaque is the gift of the Pennsylvania Forestry Association of which Mr. Pinchot had long been a member. Lloyd E. Partain, president of the association, presented the plaque to the commonwealth. Governor Leader officially accepted it.

The Society of American Foresters, of which Mr. Pinchot had been the founder and first president, was represented at the dedication by Henry Clepper.

Woodward Heads South Dakota Game Department

Harry R. Woodward was recently named director of the South Dakota Department of Game, Fish and Parks. He had been acting director of the Department for the preceding six months.

The Department has total responsibility for all state activities and programs in the fields of fish and wildlife, state parks and recreation areas, farm forestry, and timber management.

A native of South Dakota, Woodward joined the Department as a game technician in 1946. He served in that post for several months before transferring to the Forestry and Parks Division as assistant state forester. In May 1948, he became state forester, a post he held until April of 1957 when he became assistant director of the Department.

Woodward received his degree in forestry in 1941 from Utah State Agricultural College.

From 1941 until 1946 he served in

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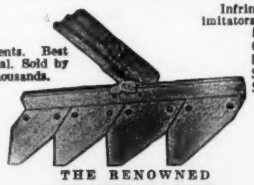

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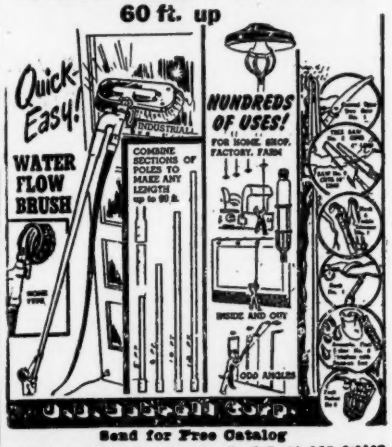

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the Army, much of his service time being spent in the South Pacific.

Bureau of Indian Affairs Prepares for Klamath Sale

In preparation for the sale of forest units on the Klamath Indian Reservation, Oregon, scheduled to begin early in 1959, the Bureau of Indian Affairs is developing new appraisal data required by the amendments to the termination act passed in August by Congress.

The bureau is determining which areas will be sold to satisfy the withdrawing members of the tribe and is setting up the trusteeship procedures for those Klamath Indians who wish to remain within the tribe.

Sales offices are being established in Klamath Falls to handle sales to purchasers who will enter into sustained-yield contracts. Units not sold by April 1961 will be purchased by the federal government and will come under Forest Service administration. The maximum price the federal government will pay is $90 million.

Allied

Dingell and Saylor Given National Conservation Awards for 1958

Congressmen John D. Dingell of Michigan and John P. Saylor of Pennsylvania have been given national awards for distinguished service to conservation during 1958 by the Izaak Walton League of America, National Parks Association, National Wildlife Federation, Sport Fishing Institute, Wilderness Society, and Wildlife Management Institute.

The presentations were made at a special dinner ceremony in Washington, D. C. on October 21. Saylor and Dingell were cited for the leadership and direction given legislative proposals for improving and strengthening programs for the management of the nation's wildlife, water, park, and forest resources.

Texas Forestry Association Elects Officers

Clyde Thompson, superintendent of the Logging Department, Southern Pine Lumber Co., Diboll, Tex., was elected president of the Texas Forestry Association October 24 at a special meeting of the Board of Directors attending the 44th Annual Meeting of the Association.

Other officers elected were Marvin

Angle, International Paper Co., Nacogdoches, first vice-president; and J. K. Herndon, Kirby Lumber Corp., Houston, second vice-president. E. R. Wagoner, Lufkin, was re-appointed executive secretary. E. O. Siecke, College Station, is president emeritus.

The principal speech of the day was delivered at a banquet by A. G. Hall, forest relations council, Washington, D. C.

Private & Industrial

C Z Corp. Closes Logging Railroad

One of southwest Washington's last logging railroads ceases operation this winter. Crown Zellerbach Corporation in September announced plans to shift from railroad to truck logging in their tree farm operations centered at Cathlamet.

The 26-mile railroad now extending from the Columbia River at Cathlamet up the Alochoman Valley of Wahkiakum County had its beginning three-quarters of a century ago.

"No decrease in overall timber harvests on Crown Zellerbach's Southwest Washington tree farms will occur," states Logging Manager L. N. Rees. The company will continue to operate the booming grounds at Cathlamet and expects to establish its southwest Washington timber headquarters there early in 1959. A modern machine shop, equipped to handle company logging equipment from all parts of Wahkiakum and Pacific counties is now under construction near Cathlamet.

After the railroad is closed down late this year, the track will be removed and much of the right-of-way converted to truck roads.

Collet Becomes Vice President of Olin Mathieson

M. H. Collet has been promoted to corporate vice president of the Olin Mathieson Chemical Corp. and has taken over as general manager of the Forest Products Division at West Monroe, La.

Southern Pulpwood Production in 1957 Cited

The value of pulpwood produced in the South totaled $396,000,000 in 1957, according to the Southern Pulpwood Conservation Association, Atlanta, Ga.

This value was based on a 12-state pulpwood production survey by the U. S. Forest Service Southern and Southeastern Experiment Stations in cooperation with SPCA.

Georgia led the South with a total production of more than $77,000,000 worth of pulpwood. Alabama followed with a crop valued at nearly $46,000,000. In each of the following six states the value of the harvest exceeded $30,000,000: Mississippi, Florida, North Carolina, South Carolina, Louisiana, and Virginia.

More than 90 percent of the South's counties shared in this income in the 12-state region from Virginia to the forested area of Texas. Both Alabama and South Carolina reported production from 100 percent of their counties, followed by Georgia and Mississippi reporting production in all but one county in 1957.

The survey revealed that more than 15 percent of the total pulpwood production was hardwood. It also showed a continued trend toward a more efficient utilization of trees harvested. An all-time high of 6 percent of the total production came from the use of sawmill slabs and veneer cores.

H. J. Malsberger, general manager of SPCA, said, "With signs of better business conditions ahead, it is expected that the decline of 2.8 percent of pulpwood production in 1957 compared with 1956 will soon be reversed."

Public

Virginia Establishes Watershed Position

Virginia State Forester George W. Dean has announced the appointment of C. J. Witter to the position of supervisor of watershed forestry. This is a new position and will be under the Division of Forest Management.

Witter has been with the Division of Forestry since 1944. His former assignment was as chief of the Charlottesville District Forest Management Division. "Witter will supervise the forestry phase of new watershed projects which are being developed in many counties throughout the state under the provisions of Federal Public Law 566," said Dean.

Witter's former position is being filled by John Shavis, who had been Witter's assistant in the Charlottesville district.

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Three Move to Portland Office

Transfer of Jack I. Groom and George W. Williams to staff positions in the Forest Service's Pacific Northwest Region office, Portland, Ore., has been announced by Regional Forester J. Herbert Stone. Changes became effective in October.

Groom works in the section of land classification and uses. He transferred to Portland from the Fremont National Forest where he was in charge of fire control activities.

Williams, formerly a staff officer in the headquarters of the Gifford Pinchot National Forest, is working in the section of lands and uses.

Transfer of Donald J. Stoner to the regional division of Timber Management in the section of management plans and sale administration was announced in November. Since 1951 Stoner has been assigned to the Snoqualmie National Forest.

Stoner is a native of Pennsylvania and a forestry graduate of Penn State.

Ohio Utilization Research Laboratory Dedicated

A new wood utilization research laboratory was formally dedicated on October 13 at Wooster, Ohio. The facility is a part of the Ohio Agricultural Experiment Station in which Oliver D. Diller heads the Department of Forestry.

Dowden Named Technical Advisor for Forest Insect Biological Control

Philip B. Dowden, U.S. Forest Service entomologist, has been appointed technical advisor for the federal forest insect biological control program in the Northeast.

Mr. Dowden, who will continue to be stationed at the Northeastern Forest Experiment Station's Forest Insect Laboratory at New Haven, Conn., will also advise the Washington Office of the Forest Service on national matters of biological insect control and on programs that involve the importation of natural enemies of forest insects.

The announcement of Mr. Dowden's new position was made here by Dr. Ralph W. Marquis, director of the Northeastern Forest Experiment Station.

Mr. Dowden has for many years been leader of the biological-control project at the Forest Insect Laboratory at New Haven. This summer and autumn he has been on a mission to Japan, where since April he collected predators of the balsam woolly aphid.

A graduate of the Unversity of Massachusetts, he has worked for the Department of Agriculture since 1923 in all phases of biological control of forest insects, both in this country and in Europe.

Dr. Franklin B. Lewis, entomologist at the Laboratory, will be acting leader of the biological-control project. His research work will center on diseases of the gypsy moth.

Dr. William E. Waters has been appointed as leader of the Laboratory. Dr. Waters, who will head the Laboratory's technical program and administration, will continue to serve as project leader for forest insect detection and appraisal surveys.

Paul A. Godwin has been advanced to project leader of biology and ecology to replace Mr. Jaynes, who retired at the end of August. Current emphasis in this project is being given to research on the white-pine weevil, white pine cone beetle, and gypsy moth.

Avery Appointed to Economics Research Post

Thomas E. Avery of the Southern Forest Experiment Station in New Orleans has been appointed to the Division of Forest Economics Researrch in the Washington office of the Forest Service. He replaces Earl Rogers who took an assignment in Iran. In his new position, Avery will plan and conduct research in techniques of making forest surveys with particular emphasis on photogrammetry.

While at the Southern Station Avery contributed many publications on photogrammetry and its application to forest mensuration. From 1951 to 1955, Avery taught forestry at Arkansas A & M College. He was an industrial forester in Georgia from 1950-1951.

He holds a doctor's degree from the University of Minnesota.

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Bever Directs Forest Lands Research at Oregon

Dale N. Bever, associate director of forest lands research at the Oregon Forest Research Center, Corvallis, has been named acting director by the Forest Protection and Conservation Committee. He took over duties October 1. He succeeds Dick W. Berry who resigned in September to devote full time to advanced academic studies.

A forest lands research staff member for 12 years, Bever has been associate director since 1952. He received his bachelor's degree from Oregon State College in 1942 and his master's degree from the same institution in 1954.

Bever first joined the staff in 1946 after serving 4 years in the 4th Armored Division during World War II. In 1950 he was recalled to serve with the Combat Engineers in Korea and returned in 1952 to his duties as Associate Director.

Southeastern Station Has Three New Staff Members

In November Dr. Otis C. Maloy, Jr. joined the staff of the Lake City Research Center of the Southeastern Forest Experiment Station. A plant pathologist, he is assigned to the Olustee Experimental Forest.

Dr. Maloy was a teaching assistant at New York State College of Agriculture at Cornell University, Ithaca, where he received his Ph.D. in 1958.

Gene D. Amman has been appointed to the staff of the Southeastern Forest Experiment Station in Asheville. Assigned to the division of entomology, he will concentrate on research phases of this division. He has worked as a forestry research aid in the Forest Insect and Disease Laboratory of the Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colo.

Samuel J. Rowan recently joined the Athens-Macon Research Center of the Southeastern Station as plant pathologist. Assigned to forest seed and and nursery research, Rowan is stationed at the Georgia Forestry Center, near Macon. Previously, Rowan was assistant pathologist at the Georgia Coastal Plain Experiment Station.

USFS, Idaho University Open Genetics Center

The Northern Idaho Forest Genetics Center, a cooperative installation of the U. S. Forest Service and the University of Idaho, opened September 22 at 1221 S. Main St., Route 3, Moscow, Idaho. The new center is staffed and financed by the Forest Service, but is located on lands provided by the university. Cooperation extends to many phases of the work.

The principal present job of the center will be expanding the project for breeding blister rust resistant white pine. Work in inheritance of growth rate and other timber qualities of rust resistant trees is proceeding simultaneously. Some work with other conifers has begun and will be expanded in the future.

R. T. Bingham is chief of the center. Staff will include three research foresters, one forestry aid, and one clerk-stenographer.

Education

Paul Smith's Adds Faculty Members

The Forestry Department of Paul Smith's College, Paul Smiths, N. Y. has been enlarged by the addition of three new members.

John F. Backels, a native of Marquette, Mich., is teaching dendrology. He graduated from the University of Michigan in 1952 with the BSF and received his MF degree in 1953. In 1958 he received a masters in business administration from the University of Washington.

William M. LaBounty, a native of Saranac Lake, N. Y., is teaching surveying. He graduated from St. Lawrence University with an AB (major in geology) degree in 1948 and took two years of graduate work at Oberlin College in Ohio.

Edwin C. Woodward is teaching forest protection, introduction to forestry and mathematics for pre-surveying students. His educational background includes graduation from the U. S. Naval Academy in 1932, from Paul Smith's College Terminal Forestry Program in 1952 with an AAS, and from the University of New Hampshire in 1958 with an MSF degree in forest management. His military experience includes 22 years of active duty in the Navy, serving as a Commander of Escort Division 44 during World War II, and retiring with the rank of Commander.

Richard Campana to Maine Teaching Position

Dr. Richard Campana, associate plant pathologist on the staff of the Illinois Natural History Survey, has been appointed head of the Department of Botany and Plant Pathology at the University of Maine. In addition to serving as professor of botany and head of the Department of Botany and Plant Pathology in the College of Agriculture, he will be head of the Department of Botany and Plant Pathology in the Agricultural Experiment Station.

Dr. Campana received a BS in Forestry from the University of Idaho in 1943. Following the war he was on the teaching staffs of Pennsylvania State

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Knapp, G. Ed.	962
Kurfew, Inc.	954
Lemieux, Frank J.	963
Lind, A. L. Co.	954
Lowther, Harry A. Co.	950
Meadows, Ben Co.	951
Mora Chemical Co.	952
Musser Forests, Inc.	952
National Agricultural Supply Co.	953
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Northern Tree Co.	962
Pacific Weather Service	954
Panama Pump Co.	949
Pomeroy & McGowin	963
Pond & Moyer, Inc.	962
Poulan Saw Co.	957
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Price, William H.	961
Remington Arms Co., Inc.	Insert
Rich, C. H. Forest Fire Tool Co.	959
Ronald Press Co.	951
Rootspred Tree Planter	950
Sanders, Paul M.	963
Sebrell, J. B. Corporation	959
Sewall, James W. Co.	960
Silva, Inc.	954
Smith, D. B. Co.	2nd Cover
Southern Coatings & Chemical Co.	882
Southern Seed Co.	955
Stewart, Fred Associates	955
Stock, John W.	962
Stratex Instrument Co.	956
Timber Mgmt. Service	962
Tree Farm Mgmt. Service	961
Utility Tool & Body Co.	954
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Winslow, Paul T.	961

University and North Carolina State College. He received both master's and doctorate degrees in forest pathology from Yale University. Recipient of a research fellowship during doctorate study at Yale, he was also assistant forest pathologist in the Division of Forest Pathology, United States Department of Agriculture for three years. Serving as president of the Illinois Technical Foresters Association, vice president of the Midwestern Chapter of the National Shade Tree Conference, member of the Board of Governors and chairman of the Nomenclature and Standards Committee of the National Shade Tree Conference, he is senior author of "Guide for Community-wide Control of Dutch Elm Disease," a brochure recently published by the Midwestern Chapter of the Conference.

Richard Thornton Fisher Research Fellowships To Be Awarded

Harvard University announces two Richard Thornton Fisher Research Fellowships designed to encourage research in silviculture, management, and forest production. These fellowships, available for the year 1959-1960, carry stipends of $2,200 each. They may be used toward the expenses of tuition, living, and incidental travel for a period of approximately 15 months. The fellowships will enable students to matriculate in the Harvard Graduate School of Arts and Sciences, and to satisfy residence requirements toward the degree of Master in Forest Science, or toward a doctor's degree in biology or economics with reference to forest problems. Recipients of the fellowships may supplement the stipend by serving part time as research assistants at the Harvard Forest. Proceeds from this work could total approximately $800 for each.

The fellowships are open to those who hold bachelor's degrees from undergraduate schools of forestry or from colleges of liberal arts. Graduates of the latter schools must have majored in biological science.

Applications must be completed and filed with the Graduate School of Arts and Sciences, 24 Quincy Street, Cambridge 38, Mass., by February 1, 1959. Further information, together with application blanks for admission and for the financial aid, may be obtained from the office of the Graduate School, or from the Director of the Harvard Forest, Petersham, Mass.

Forestry Employment

S.A.F. members are privileged to insert one 60-word advertisement in this column without charge. Forest industries desiring to employ foresters may insert advertisements at the rate of $4 per column inch. Copy must be received by the end of this month for an advertisement to appear in the issue after next.

Obviously, the Society cannot assume responsibility beyond making it possible for prospective employee and employer to enter into negotiations.

Positions Available

NURSERYMAN WANTED:

Assistant nursery superintendent. Beginning salary $4500 per annum. Educational background required: degree in forestry, horticulture or agronomy. Nursery experience desirable, but not essential. Nursery located in southeast Texas. If qualified and interested write Director, Texas Forest Service, College Station, Texas.

Forester I ($348.-$410.) and Forester II ($381.-$443.). Graduation from college with major in forestry required; also 2 years of forestry experience for Forester II. **Write Mrs. Loretta Fukuds, Recruiting and Examining Supervisor, Territory of Hawaii, Dept. of Civil Service, 825 Mililani St., Honolulu, Hawaii.**

Positions Wanted

Position desired in research or product development with firm producing laminated structures, plywood, or similar products. Holds B.S. in applied sciences and will complete work on a master's degree in wood utilization in January. Has research experience in lamination. Prefers South or Southeast.
Box J, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, B.S., 1953. Age 33, married, two children, veteran. Six years successful experience in all phases of forest management, land and timber acquisition, fire control, timber sales; some experience logging and sawmill management. Presently employed in industry but desire position with opportunity, preferably in Northeast or Lake States.
Box K, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, B.S., 1955, M.F., 1957, age 25, married. Experienced in tropical forest management and general forest public relations. Desire employment in field of public relations, education, or research. Prefer location on West Coast U. S. or abroad. Detailed summary of experience and qualifications furnished upon request.
Box L, Journal of Forestry, Mills Building, Washington 6, D. C.

Timber manager. Fully experienced and qualified to manage and supervise a timber project from acquisition to manufacture. Forestry graduate. Prepared to accept foreign assignment.
Box M, Journal of Forestry, Mills Building, Washington 6, D. C.

POSITION WANTED — Preferably in some form of forest management or wood procurement program, possibly coupled with flying duties. Would consider entering other related fields. B. F. Univ. of New Hampshire, 1942. 13 years experience, including selective marking and log grading, and assistant management of 32,000 acres of northern hardwoods. Complete details and references on request to **Box N, Journal of Forestry, Mills Building, Washington 6, D. C.**